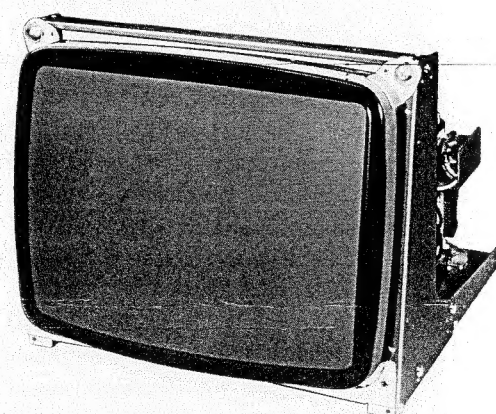


Service Manual

Color CRT Data Display
MODEL TX-1425FHB
MODEL TX-1425FHD
Chassis No. X25H



CONTENTS

SAFETY PRECAUTIONS	1
GENERAL INFORMATION	2
COLOR DISPLAY SPECIFICATIONS	2
CONNECTOR AND WIRING	5
TIMING CHART	6
CONSTRUCTION AND BLOCK DIAGRAM	7
DIMENSIONS	8
COMPONENT LOCATION	9
CONTROL DESCRIPTION	10
CAUTION FOR ADJUSTMENT AND REPAIR	11
CAUTION FOR SERVICING	11
ADJUSTMENT PROCEDURE	12
DISASSEMBLY INSTRUCTIONS	14
SCHEMATIC DIAGRAM FOR INTERFACE CIRCUIT	16
INTERFACE P.C. BOARD SOLDER VIEW	17
MAIN P.C. BOARD SOLDER VIEW	20
SCHEMATIC DIAGRAM FOR TX-1425FHB AND TX-1425FHD	21
TROUBLESHOOTING HINTS	22
REPLACEMENT PARTS LIST	30

SAFETY PRECAUTIONS

1-1 CAUTION:

No modification of any circuit should be attempted. Service work should only be performed after you are thoroughly familiar with all of the following safety checks and servicing guide lines.

1-2 SAFETY CHECK

Care should be taken while servicing this CRT display because of the high voltage used in the deflection circuits. These voltages are exposed in such areas as the associated flyback and yoke circuits.

1-3 FIRE & SHOCK HAZARD

- 1-3-1 Insert an isolation transformer between the CRT display and AC power line before servicing chassis.
- 1-3-2 In servicing pay attention to original lead dress especially in the high voltage circuit. If a short circuit is found, replace all parts which have been overheated as a result the short circuit.
- 1-3-3 All the protective devices must be reinstalled per original design.
- 1-3-4 Soldering must be inspected possible for cold solder joints, frayed leads, damaged insulation, solder splashes or sharp solder points. Be certain to remove all foreign material.

1-4 LEAKAGE CURRENT COLD CHECK (AC power supply model only)

- 1-4-1 Unplug the AC cord and connect a jumper between the two prongs on the plug.
- 1-4-2 Turn the CRT display power switch on.
- 1-4-3 Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metallic part on the CRT display such as metal frame screwhead, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be 1.8 megohm minimum.

1-5 LEAKAGE CURRENT HOT CHECK (AC power supply model only)

- 1-5-1 Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.
- 1-5-2 Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15 μ F capacitor between each exposed metallic part and good earth ground.
- 1-5-3 Use an AC voltmeter with 1000 ohm/volt or more sensitivity and measure the AC voltage across the combination 1500 ohm resistor and 0.15 μ F capacitor.
- 1-5-4 Move the resistor connection to each exposed metallic part and measure the voltage.
- 1-5-5 Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.
- 1-5-6 Voltage measured must not exceed 7.5 volt RMS, from any exposed metallic part to ground. A leakage current tester may be used in the above hot check, in which case any current

measured must not exceed 5.0milliamp. In the case of a measurement exceeding the 5.0 milliamp value a rework is required to eliminate the chance of a shock hazard.

Note: High voltage is present when this CRT display is operating. Always discharge the anode of the picture tube to the display monitor chassis to prevent shock hazard.

1-6 IMPLOSION PROTECTION

All Panasonic picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage and scratching during installation. Use only Panasonic replacement picture tubes.

1-7 X-RADIATION

WARNING: The only potential source of X-Radiation is the picture tube. However when the high voltage circuitry is operating properly there is no possibility of X-Radiation problem. The basic precaution which must be exercised is to keep the high voltage at the following factory-recommended level.

Note: It is important to use an accurate periodically calibrated high voltage meter.

- 1-7-1 To measure the high voltage, use a high impedance high voltage meter, connect (—) to the external conductive coating (aquadag) of CRT and (+) to the CRT anode button.
- 1-7-2 Turn the Brightness control fully counterclockwise.
- 1-7-3 Measure the high Voltage. The high voltage meter should indicate at the following factory- recommended level.
- 1-7-4 If the upper meter indication exceeds the maximum level, immediate service is required to prevent the possibility of premature component failure.
- 1-7-5 To prevent X-Radiation possibility, it is essential to use the specified picture tube.
- 1-7-6 The nominal high voltage is 24kV and must not exceed 26kV at zero beam current at rated voltage.

IMPORTANT SAFETY NOTICE

There are special components used in this CRT Display which are important for safety. These parts are identified by the international symbol Δ on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacture's specified parts to prevent X-RADIATION, shock, fire or other hazards. Do not modify the original design without written permission of the Matsushita Electric or this will void the original parts and labor guarantee.

GENERAL INFORMATION

- Here is an outline of Models TX-1425FHB and TX-1425FHD.
- This model is COLOR CRT DISPLAY of metal frame type.
- TX-1425FHB and TX-1425FHD uses High Resolution (Dot pitch 0.31mm) R.G.B. short persistence Color Cathode Ray Tube.
- TX-1425FHB can display up to 16 colors including black.
- TX-1425FHD can display up to 64 colors including black.
- Input signal is separate type and each input signal is put through 20-Pin connector on the P.C. Board.
- Switching regulator power supply accepts very wide range of AC mains voltage.

NOTE :

- The AC input selector of these unit is set to AC 220V side when shipping from factory. When using in AC 90 ~ 140V area, change the select switch of the power supply to AC 115V side by loosening two screws again.

COLOR DISPLAY SPECIFICATIONS

1. MECHANICAL DESCRIPTION

Dimension:

Height:	287 mm (11.3") max.
Width:	346 mm (13.62") max.
Depth:	370 mm (14.57") max.
Weight:	12 kg (26.5 lbs)

Picture Tube:

370MYB22N	
Size	13"
Gun	In-Line
Def, Angle	90°
Neck dia	29 mm (1.145")
Phosphor	R, G, B
Tilt:	10°

2. ENVIRONMENT

Ambient temp, Humidity and Altitude:

Operating:

Temp:	0° ~ 50°C (32°F ~ 122°F)
Humidity:	5 ~ 90%
Altitude:	3,000 m max. (10,000 ft)

Non-operating:

Temp:	-40 ~ 65°C (-40°F ~ 149°F)
Humidity:	5 ~ 90%
Altitude:	12,000 m max. (40,000 ft)

Storage and Shipment:

Temp:	-40 ~ 65°C (-40°F ~ 149°F)
Humidity:	5 ~ 90%
Altitude:	12,000 m max. (40,000 ft)

Vibration and Shock: (Packaged condition)

Vibration:

Frequency:	5 ~ 55 Hz
Vertical:	1.25G
Horizontal:	0.75G

Shock:

Corner and edge:	40 cm (15.8")
Front, Back, Side,	
Bottom:	50 cm (19.7")

3. ELECTRIC PERFORMANCE

Power supply:

Input Voltage:	AC 90 ~ 140V AC AC 180 ~ 264V AC
Input Frequency:	50/60 Hz
Input Current:	1A max. (at 115V AC)
Power:	70 W

Input Signals:

Horizontal Sync:

Polarity:	Negative
Signal Level:	4Vpp ± 1V
Input Imp.:	≥ 1.5K ohms

Vertical Sync:

Polarity:	Negative
Signal Level:	4Vpp ± 1V
Input Imp.:	≥ 1.0K ohms

Video Signal (R.G.B)

Polarity:	Positive
Signal Level:	4Vpp
Tr, Tf:	≤ 10 ns

Note 1. Max rise and fall times (from 10% to 90%) of input signals are less than 10 ns.

Image test Condition:

Character:	"H"
Color:	Green
Brightness:	Max. (without Background)
View Direction:	Parallel to the CRT axis
Ambient Temperature:	Room Temperature
Supply Voltage:	AC 115V

Note 2. Measure more than 20 minutes after power on.

Note 3. Normal condition is the condition that satisfies image test condition. (Condition of following item is normal condition, if not mentioned).

Video Out:

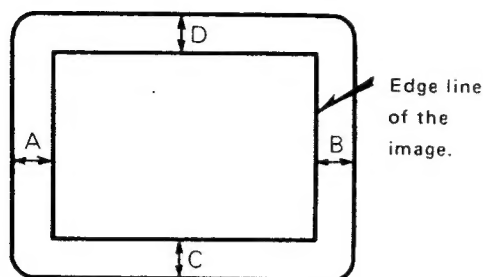
Turn Rise Time (Tr):	Less than 15 ns
Turn Fall Time (Tf):	Less than 15 ns
(Measured with 10 MHz square-wave, Duty 50%)	

Image:

Character Area:	
Horizontal:	240 ± 5 mm (9.45 ± 0.2")
Vertical:	180 ± 5 mm (7.09 ± 0.2")

IMAGE POSITION:

To be able to adjust at the center of the CRT.
Image is within the area in Figure.



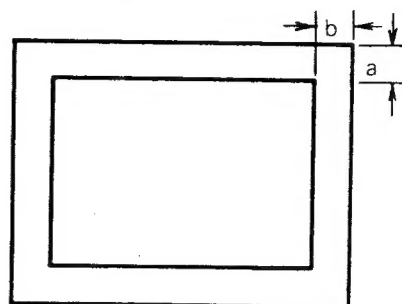
$$|A-B| \leq 6 \text{ mm (0.236")}$$

$$|C-D| \leq 6 \text{ mm (0.236")}$$

Normal Condition

(B) RECTANGULARNESS & PARALLELOGRAM DISTORTION

Edge of the image is within the area indicated by the dotted line in Figure.



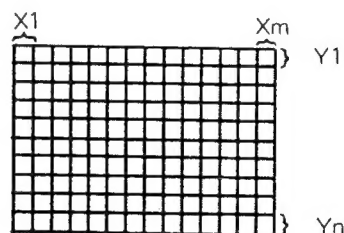
$$a \dots\dots 4 \text{ mm (0.157")}$$

$$b \dots\dots 4 \text{ mm (0.157")}$$

Input signal.....Cross-hatch

(C) LINEARITY

Horizontal and vertical linearity shall be less than 7% see Figure.



DISTORTION:

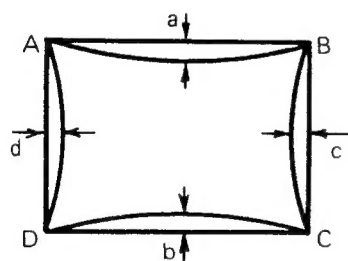
(A) PINCUSHION

Upper: (a): Less than 2.5 mm (0.098")

Lower: (b): Less than 2.5 mm (0.098")

Right and Left (c), (d):

Less than 2.5 mm (0.098")



Input signal.....Cross-hatch

Horizontal linearity

$$\frac{X_{\max} - X_{\min}}{X_{\max} + X_{\min}} \times 100(\%) \leq 7\%$$

Vertical linearity

$$\frac{Y_{\max} - Y_{\min}}{Y_{\max} + Y_{\min}} \times 100(\%) \leq 7\%$$

Note: Maximum and minimum value should not be adjacent to each other.

X max is maximum value among X1~Xm.

X min is minimum value among X1~Xm.

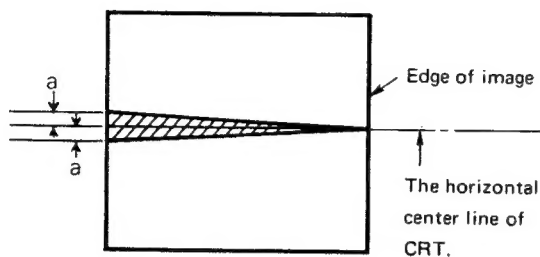
Y max is maximum value among Y1~Yn.

Y min is minimum value among Y1~Yn.

Input signal.....Cross hatch

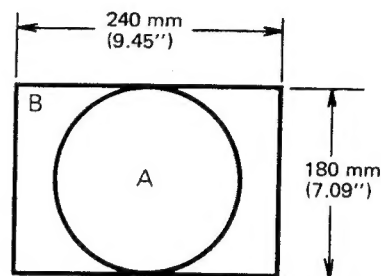
(D) ROTATION

Horizontal center line of the image shall be within the shaded area in Figure.



a.....2.5 mm (0.098")

Input signal.....Cross-hatch

OVERALL PERFORMANCE:**(A) MIS-CONVERGENCE**

Center of the display area

(A) ≤ 0.5 mm (0.0197")

Peripheral display area

(B) ≤ 0.7 mm (0.0276")

Note: Should be measured under the following conditions.

*Without horizontal magnetic field.(terrestrial).

*with vertical magnetic field.

*At room temperature.

*Input signal : Cross-hatch, R.G.B. mixed colors.

(B) RESOLUTION:

Horizontal: 810 Pixels

Vertical: 670 Pixels

INSULATION:

More than 100Mohms

(Between AC line and Chassis)

IMAGE SIZE VARIATION:

Cause	Image size variation from the normal image size.	Range of Variation
By Brightness	Within 4 mm (0.157") (Horizontal and Vertical)	Max. to Min.
By Power Supply Voltage	Within ± 4 mm (0.157") (Horizontal and Vertical)	AC 90 ~ 140V AC 180 ~ 260V
By temperature	Within ± 4 mm (0.157") (Horizontal and Vertical)	$25 \pm 25^{\circ}\text{C}$

Normal condition, if not mentioned.

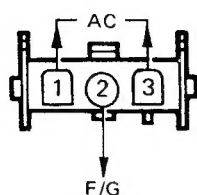
JITTER :

Less than 1 dot.

(Invisible at a distance of 45 cm (17.7"))
(from CRT surface)

CONNECTOR AND WIRING

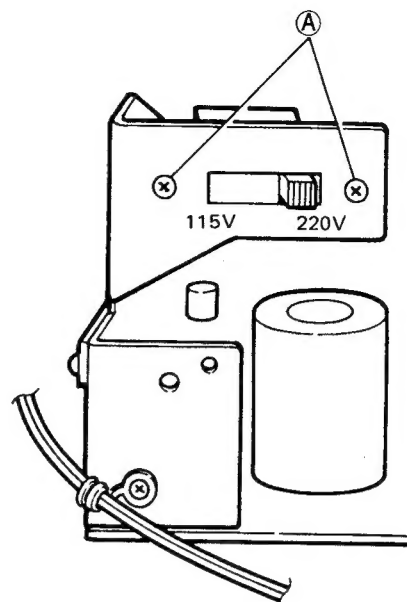
POWER SUPPLY :



- ① ③ Power input
AC 90 ~ 140/180 ~ 264V
50/60 Hz
- ② Frame ground

When factory shipping, the power select switch of the display power supply is set at 220V side (AC input 180 ~ 264V).

Therefore when use this unit in the 90 ~ 140V area, loose the 2 screws (A) shown figure before power on then change the switch at 115V side.

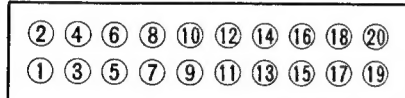


CONNECTOR TYPE:

MFR AMP Lock connector.

Display Side	Customer Side
3-Cap-housing (350767-1)	Connector (350766-1)
Pin Contact (350561-1)	Contact (350570-1)

SIGNAL INPUT:



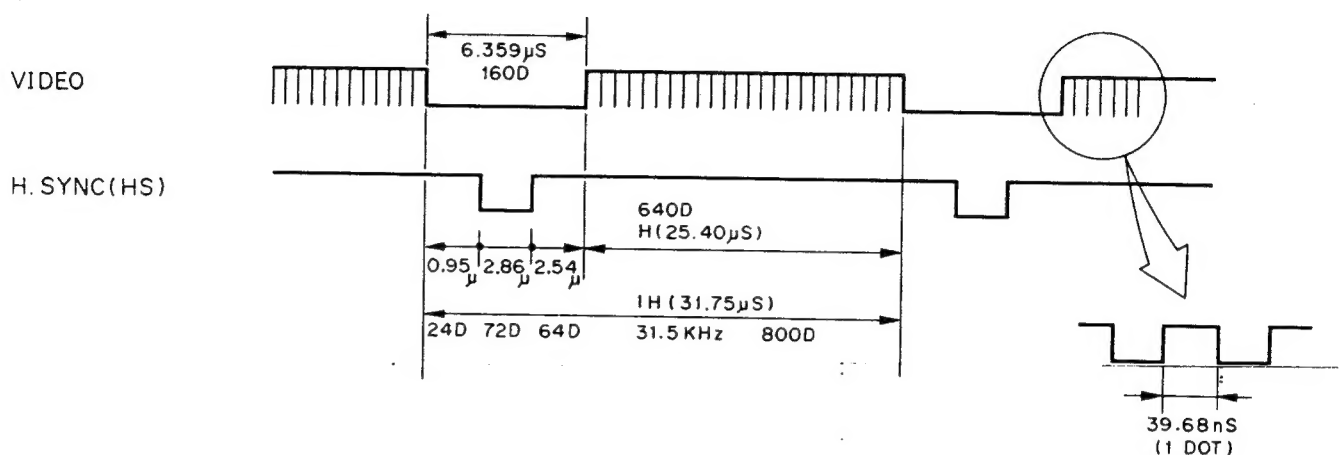
Pin No.	Description		Pin No.	Description	
	TX-1425FHB	TX-1425FHD		TX-1425FHB	TX-1425FHD
1	Vertical Sync (VS)		2	V. RTN (SG)	
3			4	SG	
5	Horizontal Sync (HS)		6	H. RTN (SG)	
7			8	SG	
9		Video (RB)	10	SG	RB RTN (SG)
11		Video (GB)	12	SG	GB RTN (SG)
13	Video (I)	Video (BB)	14	I RTN (SG)	BB RTN (SG)
15	Video (R)	Video (RA)	16	R RTN (SG)	RA RTN (SG)
17	Video (G)	Video (GA)	18	G RTN (SG)	GA RTN (SG)
19	Video (B)	Video (BA)	20	B RTN (SG)	BA RTN (SG)

CONNECTOR TYPE:

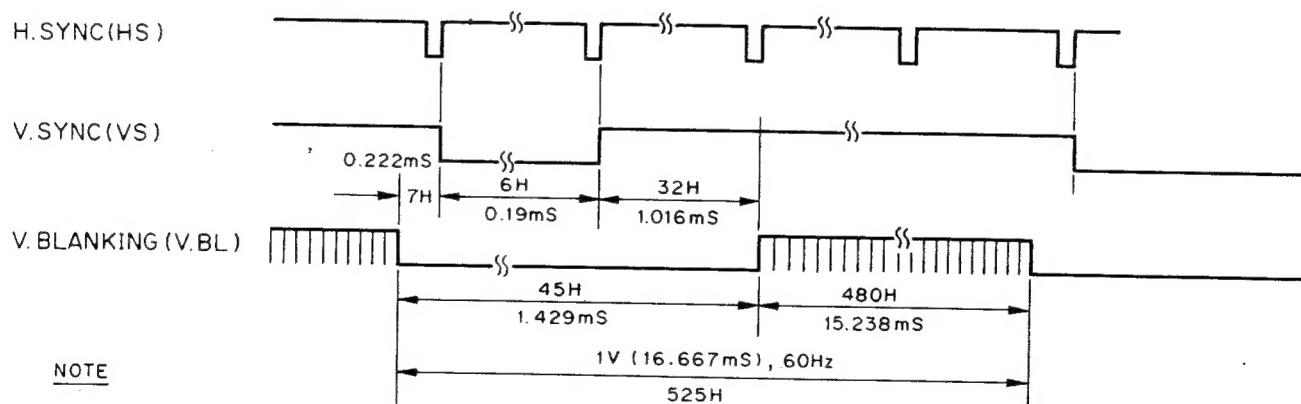
Display Side	Customer Side
MFR Hirose Electric Co., Ltd. 20P Connector (HIF3-20P-254DS)	MFR Hirose Electric Co., Ltd. 20P Connector (HIF3N-20D-254R)

TIMING CHART

HORIZONTAL SYNC: [TX-1425FHB, TX-1425FHD]



VERTICAL SYNC: [TX-1425FHB, TX-1425FHD]



NOTE

1. C_p : 25.2 MHz
2. Duty : 100%.

CONSTRUCTION AND BLOCK DIAGRAM

CONSTRUCTION OUTLINE

Note 1. : CRT's Conducting Film is Connected to SG. (Signal Ground)

AC 90 ~ 140V/AC 180 ~ 264V

Video
(R.G.B. INT)
H.SYNC
V.SYNC

POWER

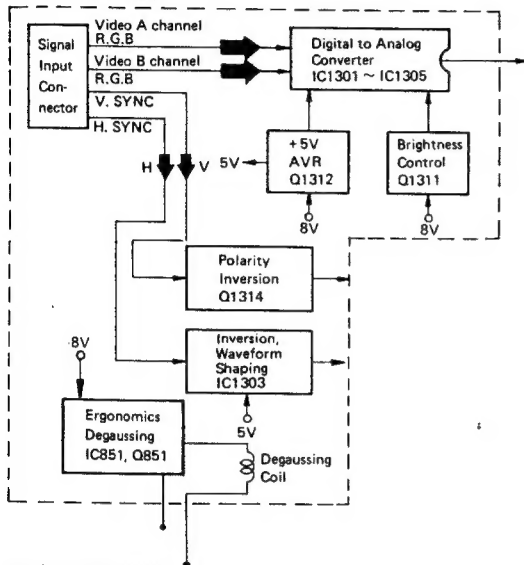
SIGNAL IN

INTENSITY

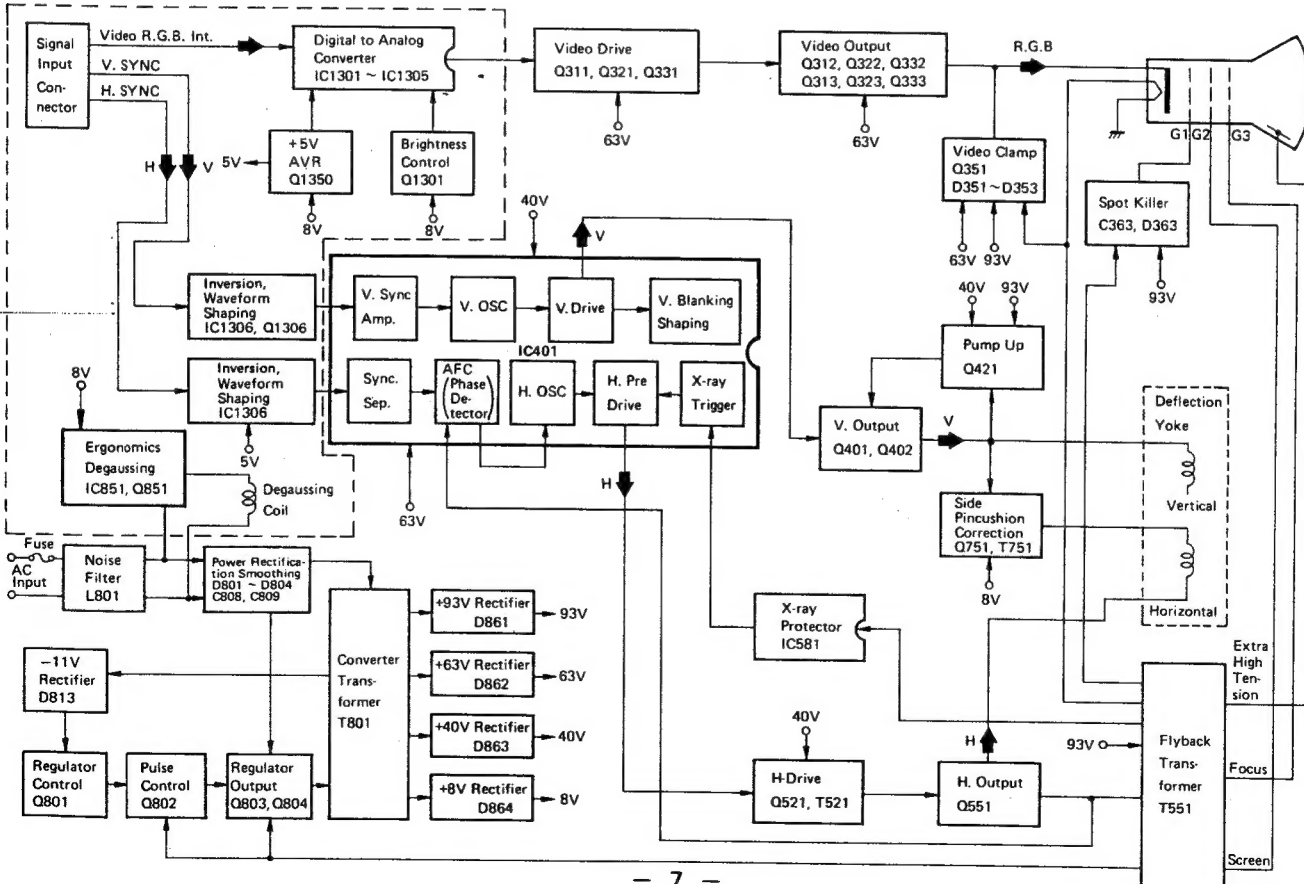
CRT

BLOCK DIAGRAM

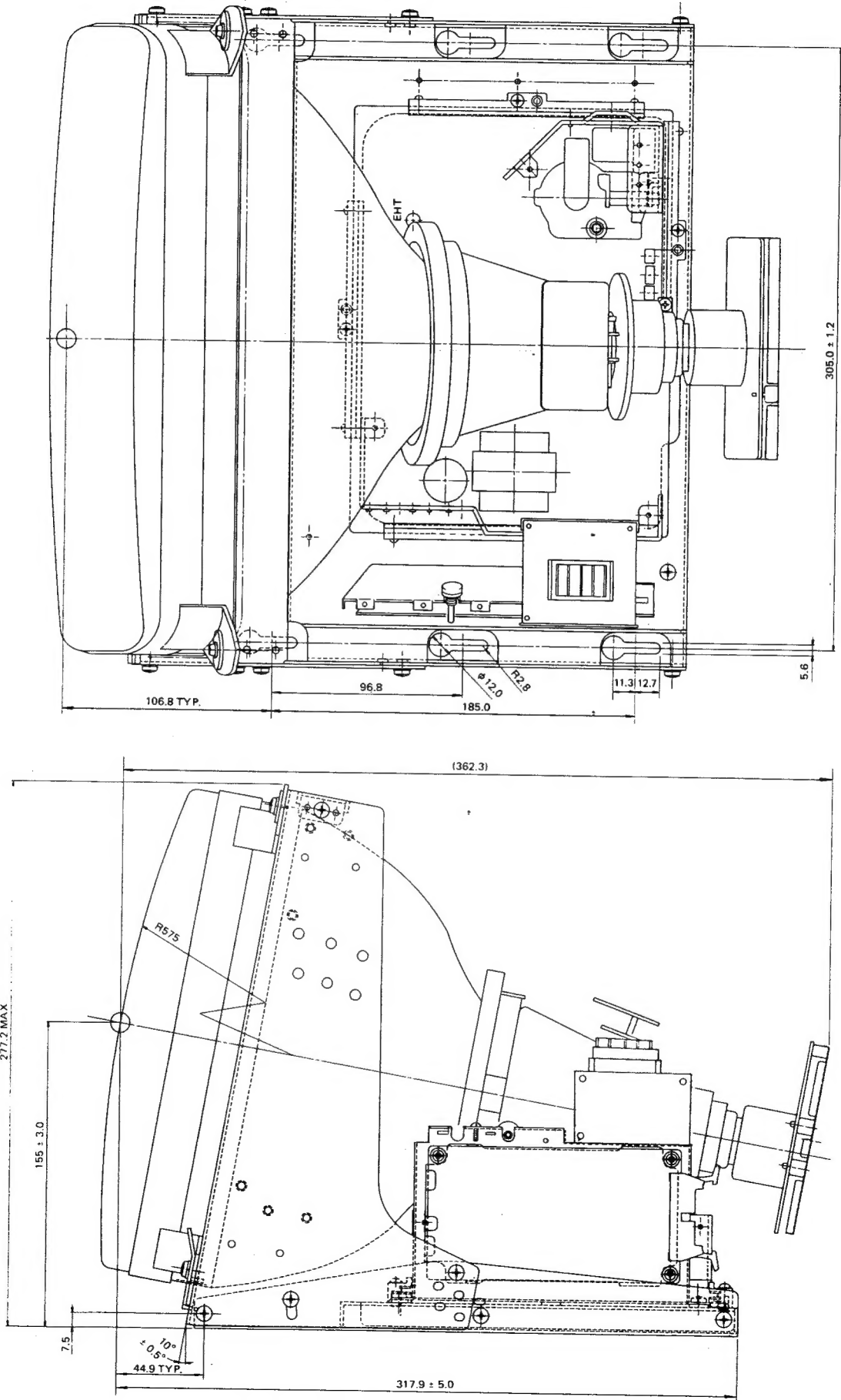
I/F [TX-1425FHD]



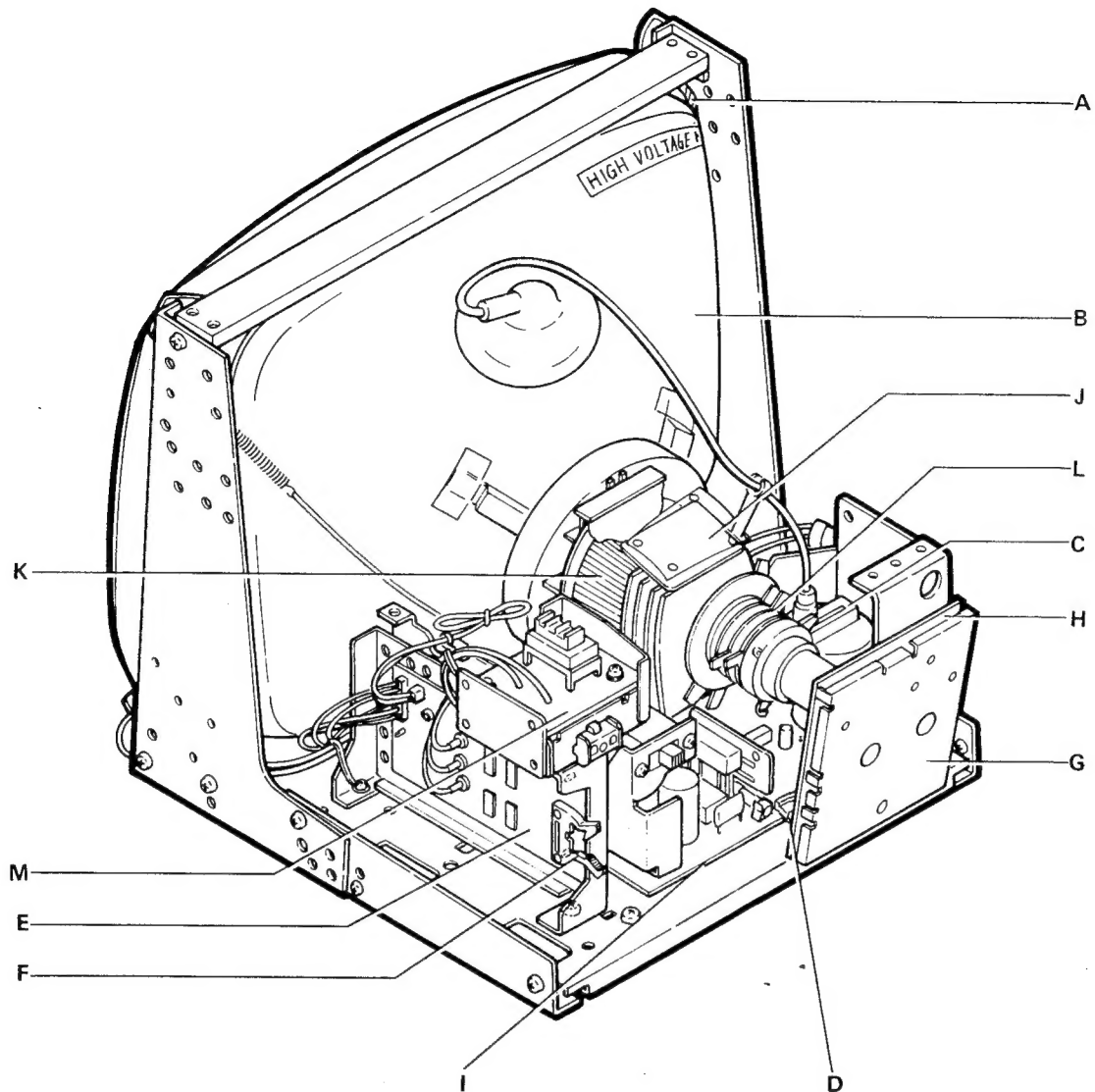
I/F [TX-1425FHB]



DIMENSIONS



COMPONENT LOCATION

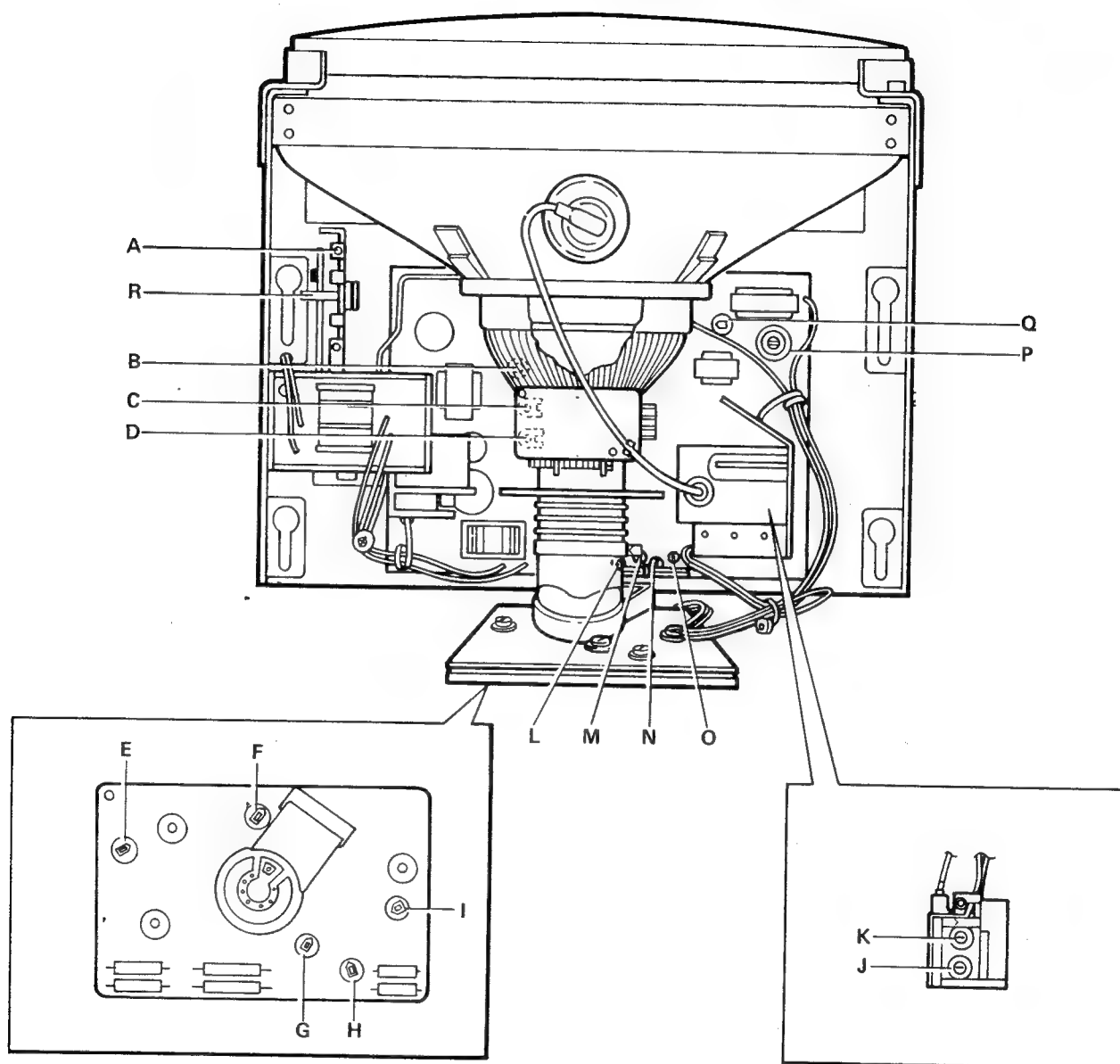


A Degaussing Coil
 B CRT
 C Flyback Transformer
 D P.C. Board Holder
 E Interface P.C. Board

F Signal Input Connector
 G Shield Plate
 H CRT Socket P.C. Board
 I Main P.C. Board
 J DY P.C. Board

K Deflection Yoke
 L Convergence Yoke
 M Line Filter P.C. Board

CONTROL DESCRIPTION



A . . . Sub Bright (VR1301)
B . . . AVR (VR811)
C . . . TILT (Convergence
 Potentiometer)(VR452)
D . . . AMP (Convergence
 Potentiometer)(VR451)
E . . . G. Gain (VR321)

F . . . G. Low-Light (VR352)
G . . . R. Low-Light (VR351)
H . . . B. Low-Light (VR353)
I . . . B. Gain (VR331)
J . . . Screen VR.
K . . . Focus VR.

L . . . V. Hold (VR401)
M . . . H. Hold (VR501)
N . . . V. Center (VR431)
O . . . Height (VR402)
P . . . H. Width (L551)
Q . . . V. PCC (VR751)
R . . . Intensity VR
 (VR305)

CAUTION FOR ADJUSTMENT AND REPAIR

1. Degaussing is inevitably required at purity adjustment or convergence adjustment.
2. At the factory, white balance meter is used but we described the data in simple way.
3. If you check or adjust electrical specification or function, more than 20 minutes burn-in is required.
4. Reforming of the leadwire is required after your repair work.

CAUTION FOR SERVICING

In case of servicing or replacing CRT, high Voltage sometimes remains in the anode of CRT. So, completely discharge high voltage before servicing or replacing CRT so as to prevent a shock to the serviceman.

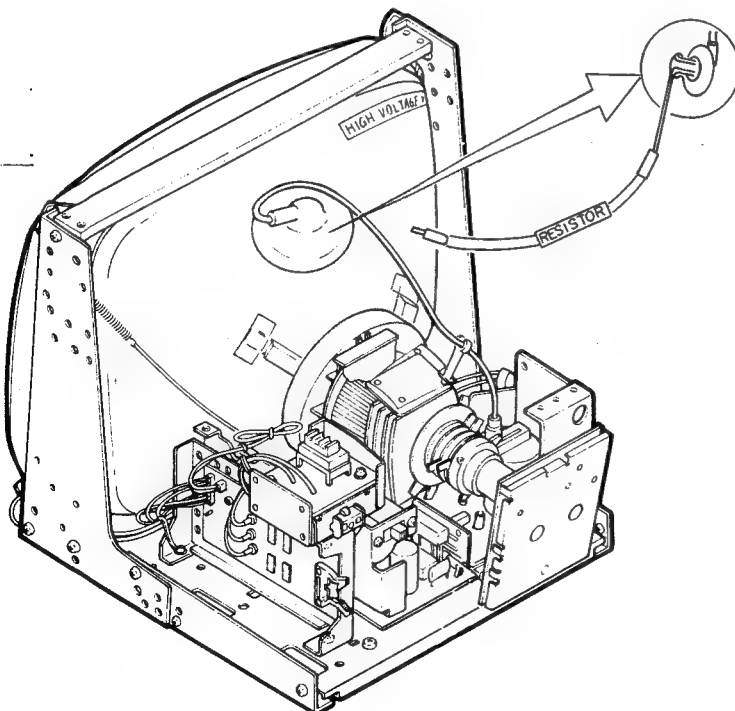
This model has a section that does not share a common ground with the power supply section. The different sections are referred to as the HOT section and the COLD section in the precautions below.

CRT Anode Discharge

1. When you check the CRT anode or replace CRT, discharge the CRT anode to the external conductive coating (aquadag) of CRT, especially you make it right after the power-off.
2. Ground the jumper wire which has the resistor ($30k\Omega < \text{resisting pressure } 100M\Omega$) on CRT aquadag or grounding fin and insert the other point into CRT anode.

NOTE: Grounding must be done at first hand.

1. Do not touch the HOT section and the COLD section at the same time. You may receive an electric shock.
2. Do not short the HOT section to the COLD section. This could blow the fuse or even damage parts.
3. Never measure the HOT section and the COLD section at the same time when using tools such as oscilloscopes or multimeters.



ADJUSTMENT PROCEDURE

1. Voltage adjustment

- 1) +B1 (+93V) Voltage adjustment
Adjust VR811 (B-Adj.) so that the voltage at TP86 (test point of TNP85804) shall be 93V.
- 2) Confirming the +B2, +B3, +B4.
 - 2-1 +B2 (+63V)
Confirm the voltage across C862 is $63 \pm 2V$.
 - 2-2 +B3 (+40V)
Confirm the voltage across C863 is $40 \pm 2V$.
 - 2-3 +B4 (+8V)
Confirm the voltage across C864 is $8 \pm 1V$.

2. Purity adjustment

Since the yoke and CRT are provided as an assembly, perform this procedure only when a problem is found in the execution of "the final confirmation method for purity".

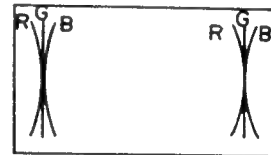
- 1) Make sure that this adjustment is done later than 30 minutes after power on.
- 2) Degauss the magnetism of chassis and CRT with degaussing coil.
- 3) Confirm that static convergence is roughly matched.
- 4) Display Red color solely with the signal generator.
- 5) Move the D.Y. rearward and adjust the purity magnet so that the center of the screen displays a pure red disk.
- 6) After the adjustment of step 5, re-adjust the static convergence if some gap was found.
- 7) After the item 6, repeat the step 5 again.
- 8) Display green and blue disks. Adjust the purity magnet so that each disk is at the center of the screen simultaneously.
- 9) Display only the red color again and move the D.Y. forward in order to display red on the whole screen.
- 10) Confirm purity in each direction by rotating the set to direction of East, West South and North after demagnetize by external degaussing coil.
- 11) If magnetism remains even after the adjustment, use the compensation magnet to obtain purity.

The final confirmation method purity

In the natural magnetic field, rotate the monitor in the direction of East, West, South and North. Earth's magnetic field may cause magnetism on the minitor. Confirm that the automatic degaussing circuit built in the monitor can erase the amount of magnetism which was introduced with above rotation.

3. Convergence adjustment

- 1) Input the mixed dot pattern of R and B with the signal generator.
- 2) Match the R and B at screen center with four pole magnet. (Rotate the two ring magnets and R.B. move circularly with the other direction respectively.)
- 3) Input the mixed dot pattern of R.G.B. with the signal generator.
- 4) At the screen center, match R and B to G with the six-pole magnet.
- 5) Make the fine tuning of D.Y. location so as to get good convergence on the whole screen.
- 6) Adjust the convergence of the fringe area (four corners), using VR451B and VR452B.



If the convergence on the fringe area is bad, put "the magnetic small pieces" at the four corners of D.Y. and fix them so the convergence becomes better.

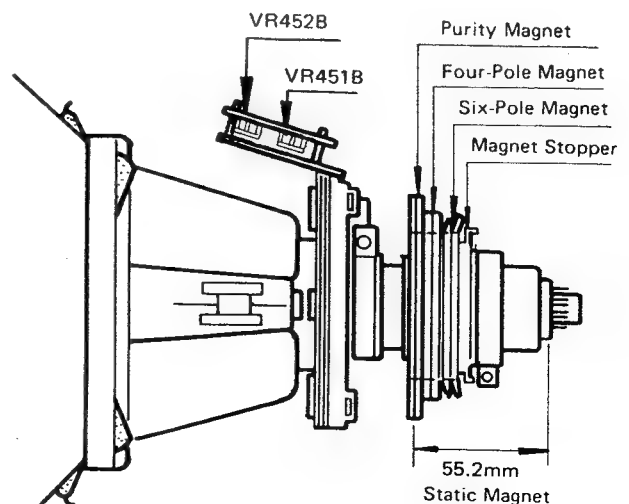
Note: Caution for putting "the magnetic small pieces".

- (1) Take more than 20mm distance from anode cap.
- (2) Don't put them together.
- (3) Don't put it on some other labels.

- 7) After the convergence adjustment, confirm if purity is OK.

In case purity is no good, back to [2] purity adjustment and re-adjust the purity.

- 8) Repeat the above procedure in several times to get the best purity and convergence.



4. Horizontal Hold (H. Hold) adjustment

Adjust VR501 (H. Hold) to set the character area in the horizontal center of the screen.

5. Vertical Hold (V. Hold) adjustment

Turn the vertical hold adjustment (VR401) in the direction of lower oscillation frequencies (clockwise) until the screen begins to roll. Then, turn the adjustment back counter-clockwise until the vertical synchronization.

6. V. Center adjustment

Adjust VR431 (V. Center) to locate the character area at the CRT center.

7. H. Width adjustment

Adjust L551 (Width) so that the H. Width is 240 mm (9.45").

Note: The adjustment moves L551's core up and down in the coil.

8. Height adjustment

Adjust VR402 (Height) so that the vertical size is 180 mm (7.09").

9. White balance, CRT cutoff, Sub Bright adjustment

- 1) Turn off the video signal only.
- 2) Turn the low light control R (VR351), G (VR352), and B (VR353) counterclockwise from the pattern side to the MAX position (in the direction of brighter light).
- 3) Turn the screen control. Also turn the low light control of the 1st lit color fully clockwise to the MIN position from the pattern side. Further, turn the screen control and turn the low light control of the 2nd lit color to the MIN position.
- 4) Turning the screen control, set it to the point where the last lit color barely lights.
- 5) Turn the low light control of the 1st lit and 2nd lit colors until the back raster is whitened.

Note: The luminance in items 2) to 5) should be made darker as much as possible until it comes to have something to do with the color tracking and adjustment thereafter.

- 6) Turn the screen control until it comes to the point where the back raster and flyback line disappear.

- 7) Connect a digital voltmeter provided with a high impedance probe, between the test point of the CRT G2 and ground and measure G2 voltage. Then, turn the screen VR to the extent of -10V, thereby reducing G2 voltage. After this, remove the probe.

- 8) Turn on the video signal.
- 9) Turn the intensity control (VR305) until it is increased to a maximum.
- 10) Turn the SUB-BRIGHT control (VR1301) to adjust the luminance to 85 cd/m².
- 11) Turn the G-GAIN control and B-GAIN control until the chrominance is X = 0.281 and Y = 0.311, respectively.
- 12) Turning the luminance control, set the luminance to 5 cd/m² (nit).
- 13) Check the chrominance value and if it comes out of the specified chrominance range, turn the low light control "G-LOW" and B-LOW" until it comes within the specification.
- 14) Cause the luminance control to be varied from maximum value to the minimum value and confirm the luminance and the color tracking. If anything is found unusual, repeat the steps 7) to 11).
- 15) Lock the screen control with lacquer coating.

10. V. PCC (Vertical pincusion) adjustment

- 1) Display cross-hatch (Green color) with the signal generator.
- 2) Adjust VR751 (V. PCC) to minimize vertical pincusion.

11. Focus adjustment

Turn the focus knob to make sure the focusing of the entire image is changed uniformly, and set the knob to a position where the focus balance of red, green, and blue colors is best.

DISASSEMBLY INSTRUCTIONS

● Removing the Line filter P.W.A (Figure 1)

- (1) Desolder and remove the wires P3, P4, P7 and P8 ① from Line filter P.W.A.
- (2) Remove the 3 screws ②.

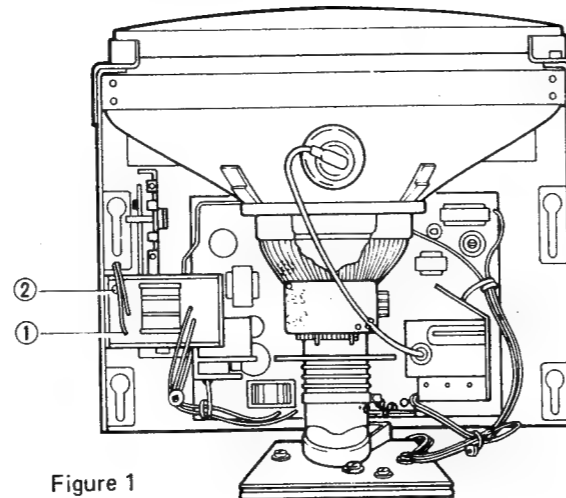


Figure 1

● Removing the interface P.W.A (Figure 2)

- (1) Remove the F1, F2 and F6 connector ③ [TX-1425FHB]
Remove the CN1302 and CN1303 connector ③ [TX-1425FHD]
- (2) Remove the interface P.W.A from four locking supports ④. [TX-1425FHB]
Remove the interface P.W.A from three locking supports ④. [TX-1425FHD]

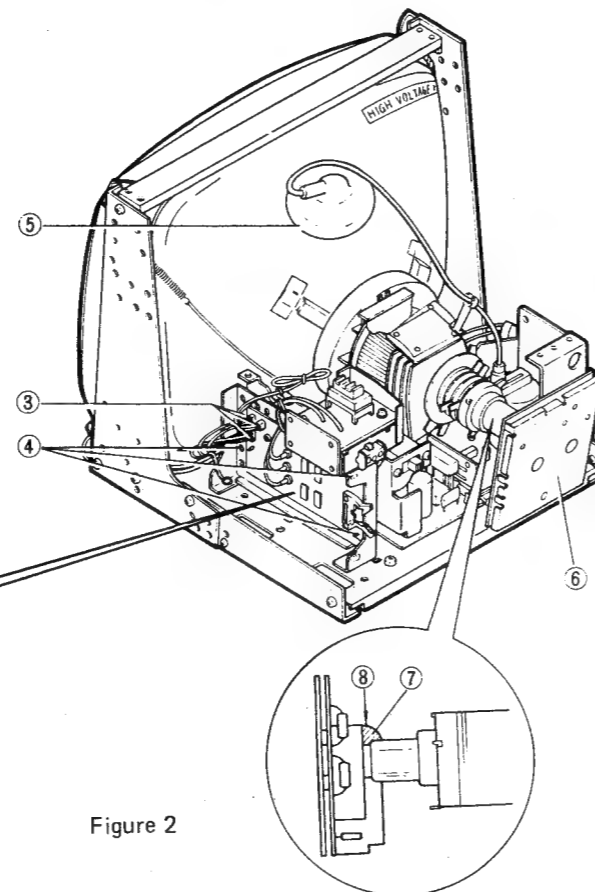
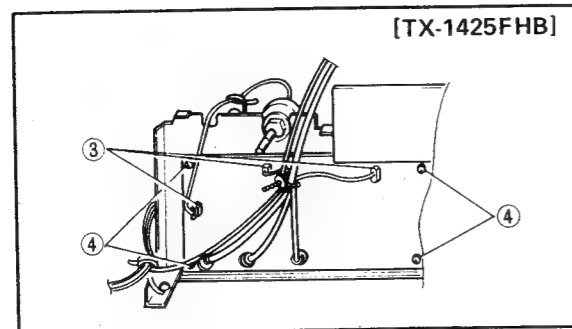


Figure 2

● Removing the CRT (Figure 2, 3, 5)

- (1) Remove the anode cap ⑤. (Care must be taken as high voltage may be remaining.)
- (2) Remove the CRT socket P.W.A ⑥ from CRT.
Note :
1) Cut the silicone glue ⑦ of CRT socket frame arrow direction by using knife ⑧.
2) Be careful not touch the knife to CRT neck.
3) After replacement or check of the CRT socket P.W. Board, put the silicone glue again.
- (3) Remove the deflection yoke connector CN104 ⑪ from main P.W. Board. (Figure 5)
- (4) Remove the CRT fixing screws from the frame ⑨.

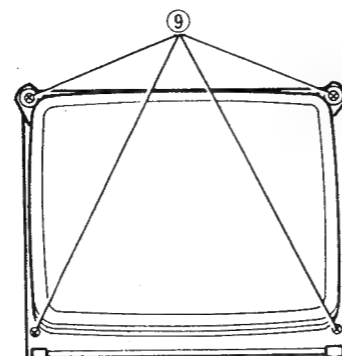


Figure 3

● Removing the CRT socket P.W.A (Figure 4, 5)

- (1) Remove the CRT socket P.W.A ⑩ from the CRT.
- (2) Remove the connector R.G.B ⑪ from CRT socket P.W.A.
- (3) Cut the CRT socket P.W.A wire tightening band ⑫ with nipper. Be careful do not damage wire.
- (4) Desolder and remove the 9-pin housing CN102B ⑬ from CRT socket P.W.A.
- (5) Desolder and remove the wires E1 to E3 and G2 ⑭ from CRT socket P.W.A.
- (6) Desolder and remove the wire ⑮ from CRT socket.

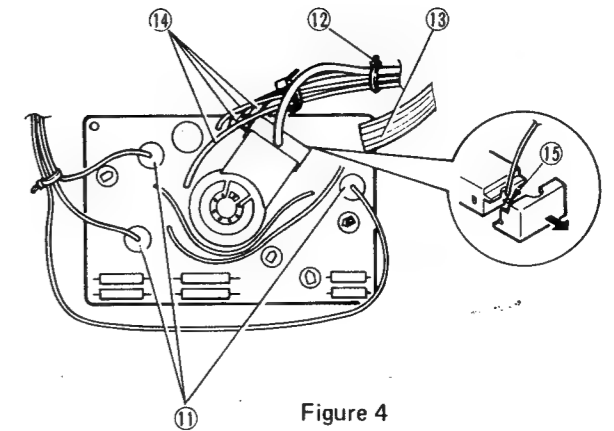


Figure 4

● Removing the main P.W. Board (Figure 5)

- (1) Remove the anode cap ⑮. (Care must be taken as high voltage may be remaining.)
- (2) Remove the CRT socket P.W.A ⑩.
- (3) Remove the deflection yoke connector CN104 ⑪ from main P.W. Board.
- (4) Remove the degauss coil connector CN107 ⑫ from main P.W. Board.
- (5) Remove the ground terminal fixing screw ⑲ from main P.W. Board.
- (6) Desolder and remove the wire AC1, AC2 and E3 ⑳ from main P.W. Board.
- (7) Remove the P.W. Board holder fixing screw ㉑ from the plate, and remove the P.W. Board holder ㉒.
- (8) Pull out the main P.W. Board ㉓ to rear.

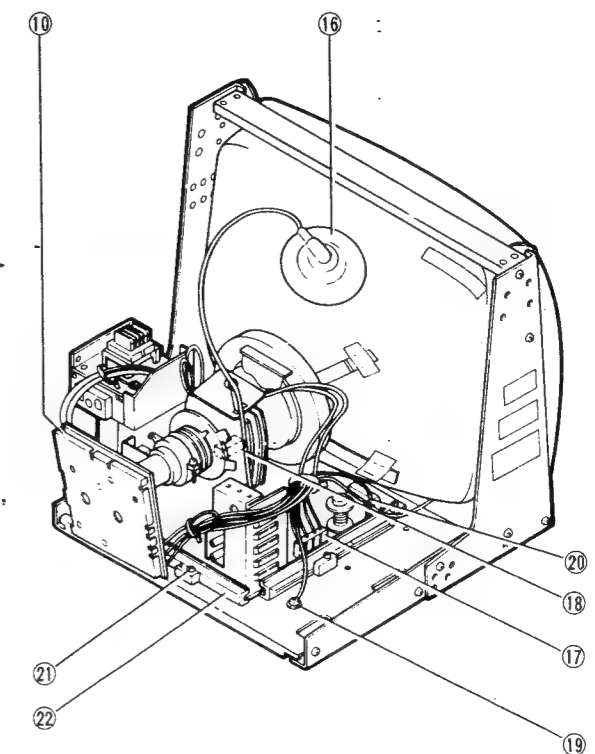
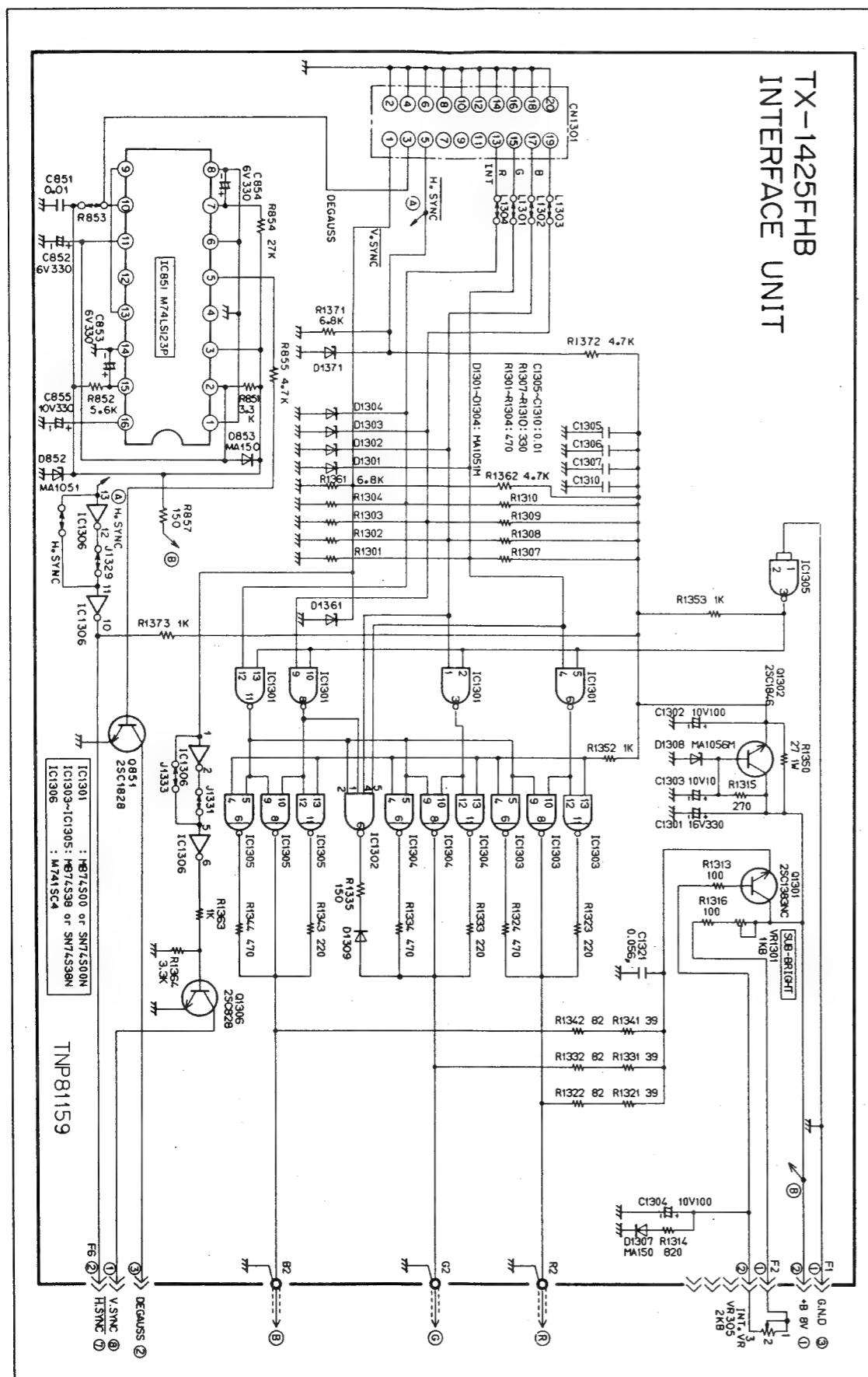
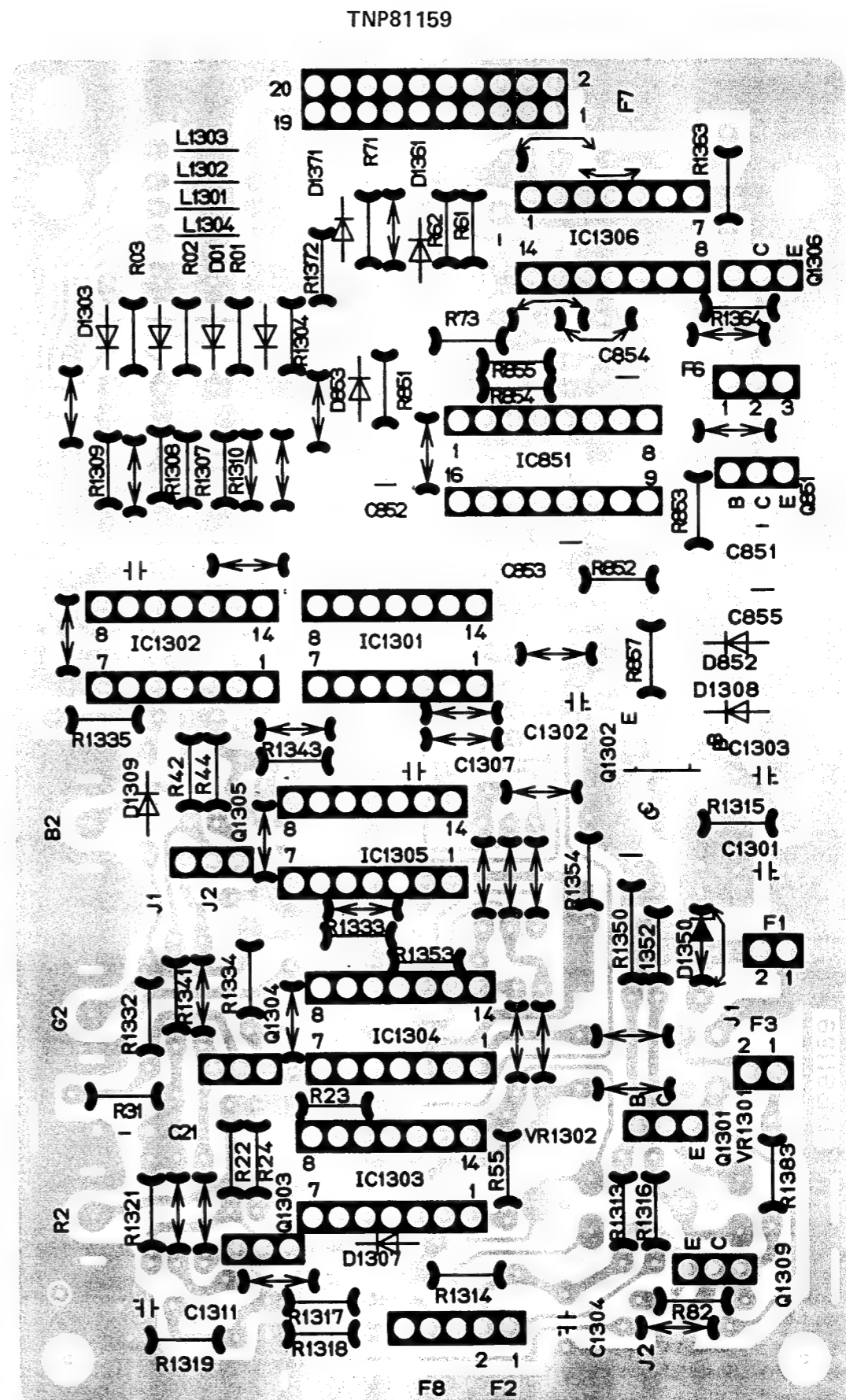


Figure 5

-SCHEMATIC DIAGRAM FOR INTERFACE CIRCUIT (TX-1425FHB)

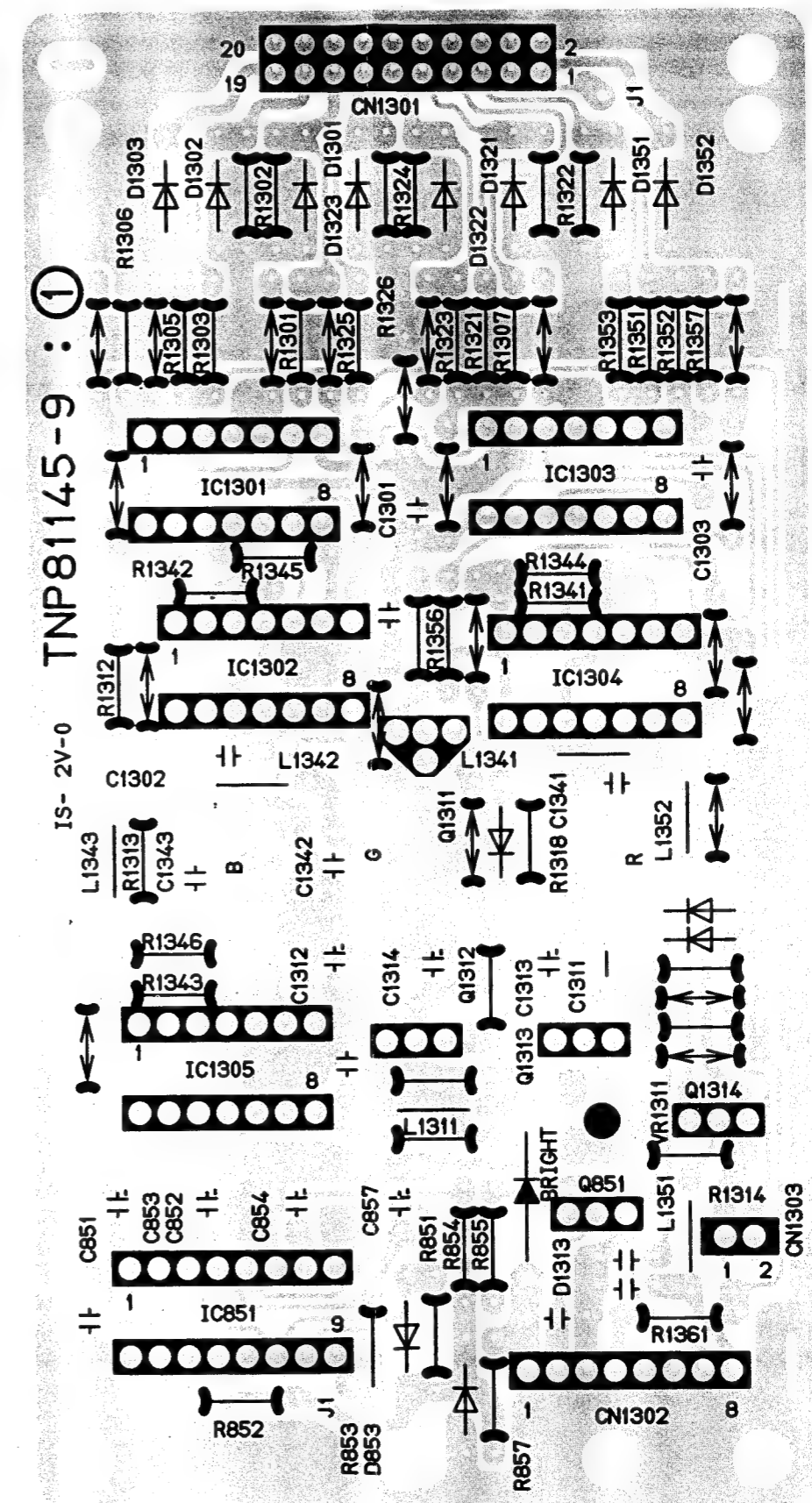


-INTERFACE P.C.BOARD SOLDER VIEW (TX-1425FHB)-



—INTERFACE P.C. BOARD SOLDER VIEW (TX-1425FHD)—

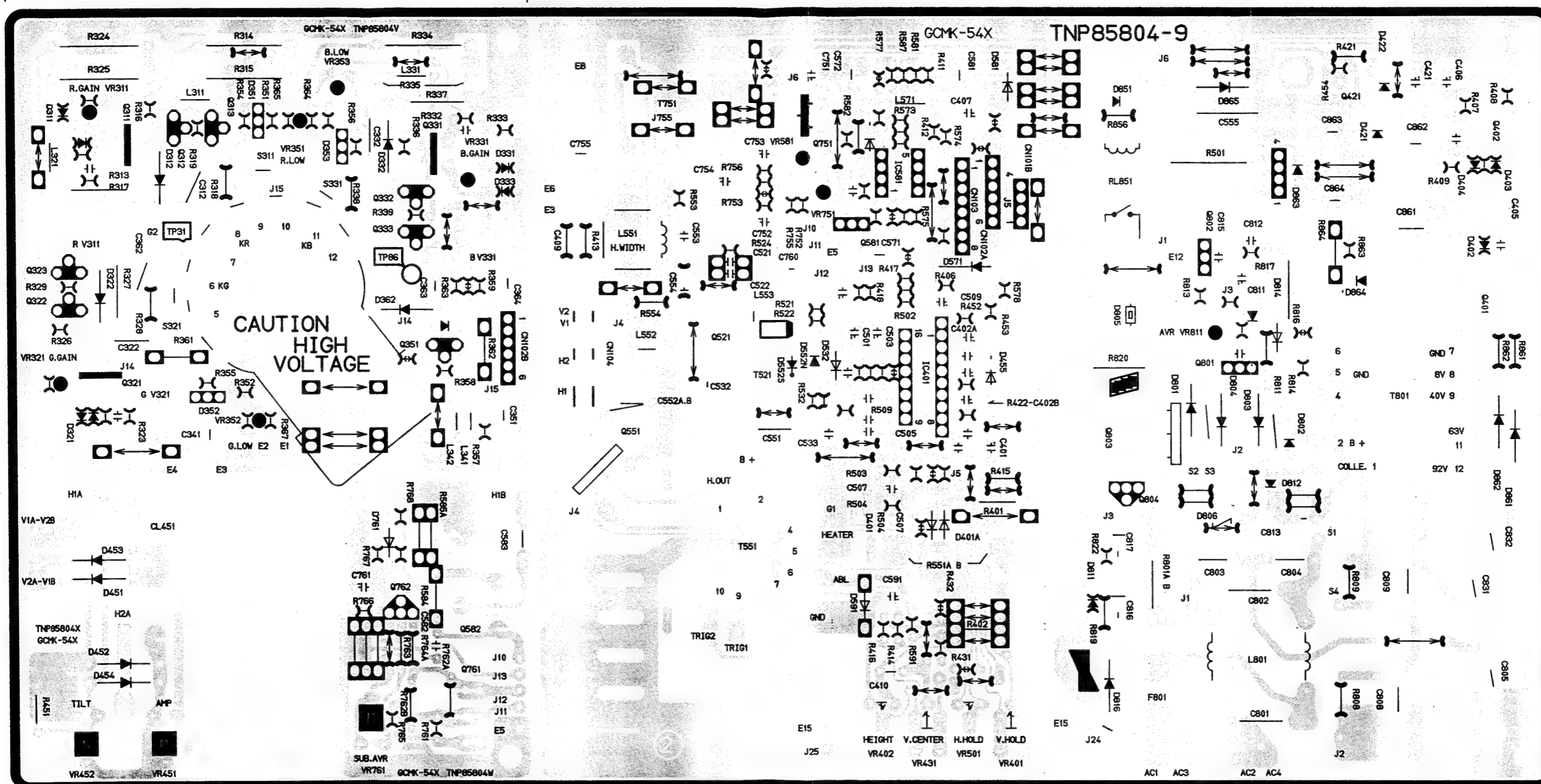
TNP81145



-MAIN P.C. BOARD SOLDER VIEW-

- CRT P.C. BOARD PART

TNP85804

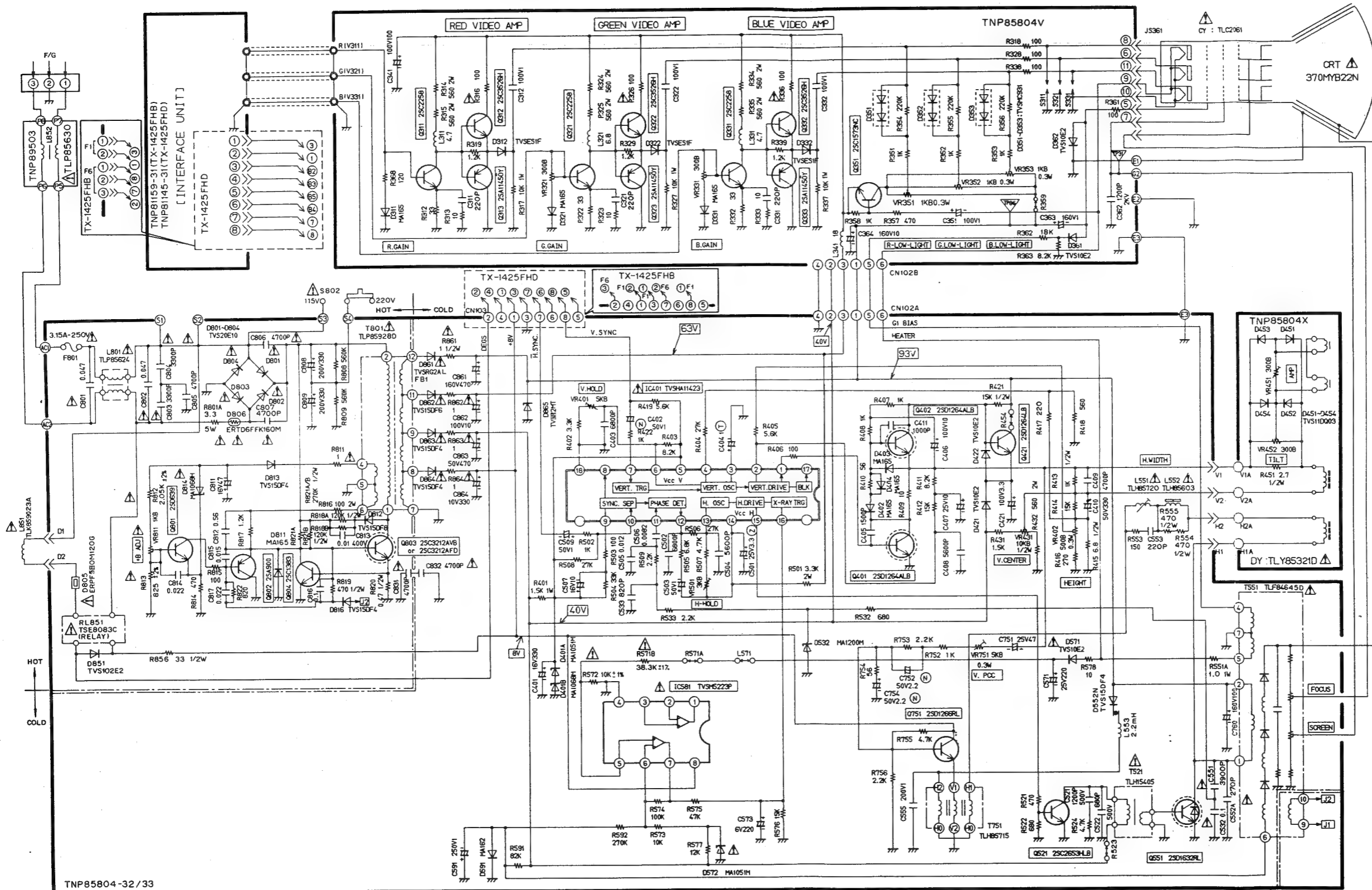


**—DY P.C. BOARD.
PART**

**UNNECESSARY
PART**

— MAIN P.C. BOARD PART

SCHEMATIC DIAGRAM FOR TX-1425FHB AND TX-1425FHD



IMPORTANT SAFETY NOTICE

The component identified by shading or the international symbol on this schematic diagram incorporates special features important for protection from X-Radiation, fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for those critical components.

NOTE

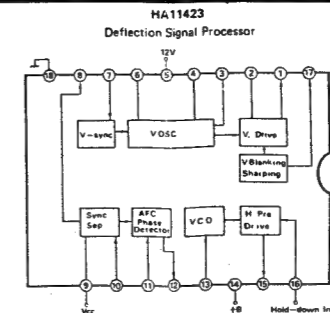
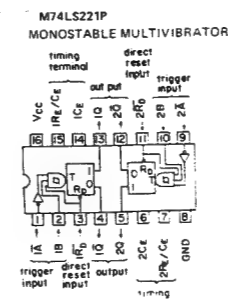
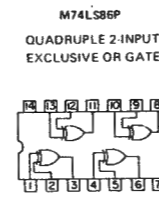
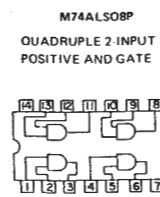
- 1. RESISTOR**
All resistors are 1/4W resistor.
Unit of resistance is OHM(Ω). (K=1,000, M=1,000,000)
- 2. CAPACITOR**
Unit of capacitance is μF unless otherwise noted.
- 3. COIL**
Unit of inductance is μH.
- 4. VOLTAGE MEASUREMENT**
a. Voltage is measured by a digital meter with DC 10MΩ OHM/V receiving normal signal.
b. Use each measurement voltage for reference.

TRANSISTOR, DIODE & INTEGRATED CIRCUIT TERMINAL GUIDE	
	25B641 25D636 25D639
	25C1383 25C1573AH
	25D1284 25D1264A
	25C2923
	25D1541 25C3212A 25D1632
	M74AL508P M74LS86P
	M74LS221P
	HA11423
	silver 20E10 purple 10E2
	15DF6
	white MA150 black MA162
	red-brown MA1120M red-red MA1220M
	brown-brown-green MA1051M, RD120EB Gray-Gray-blue MA1068H
	LN217RP
	11D003

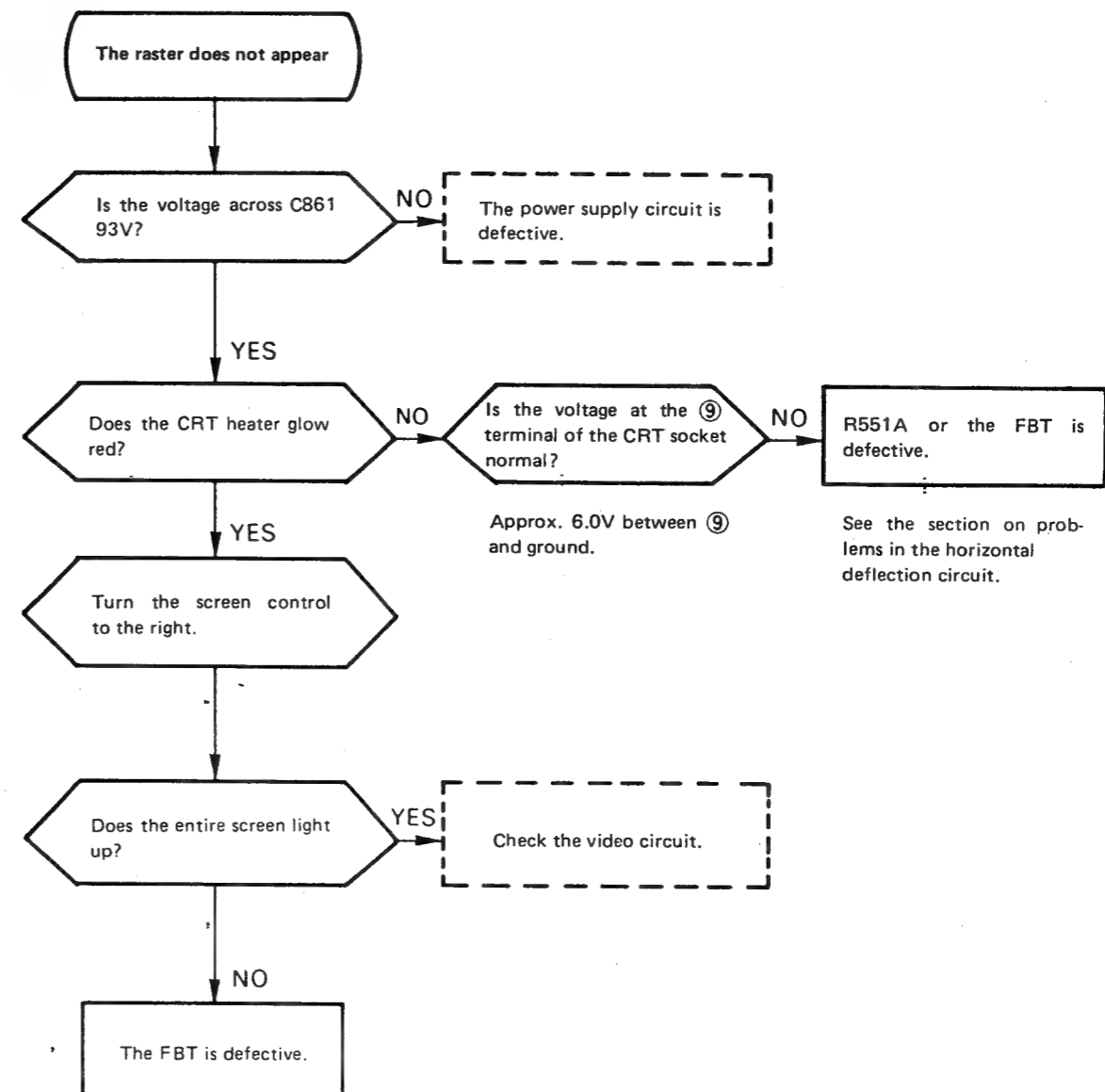
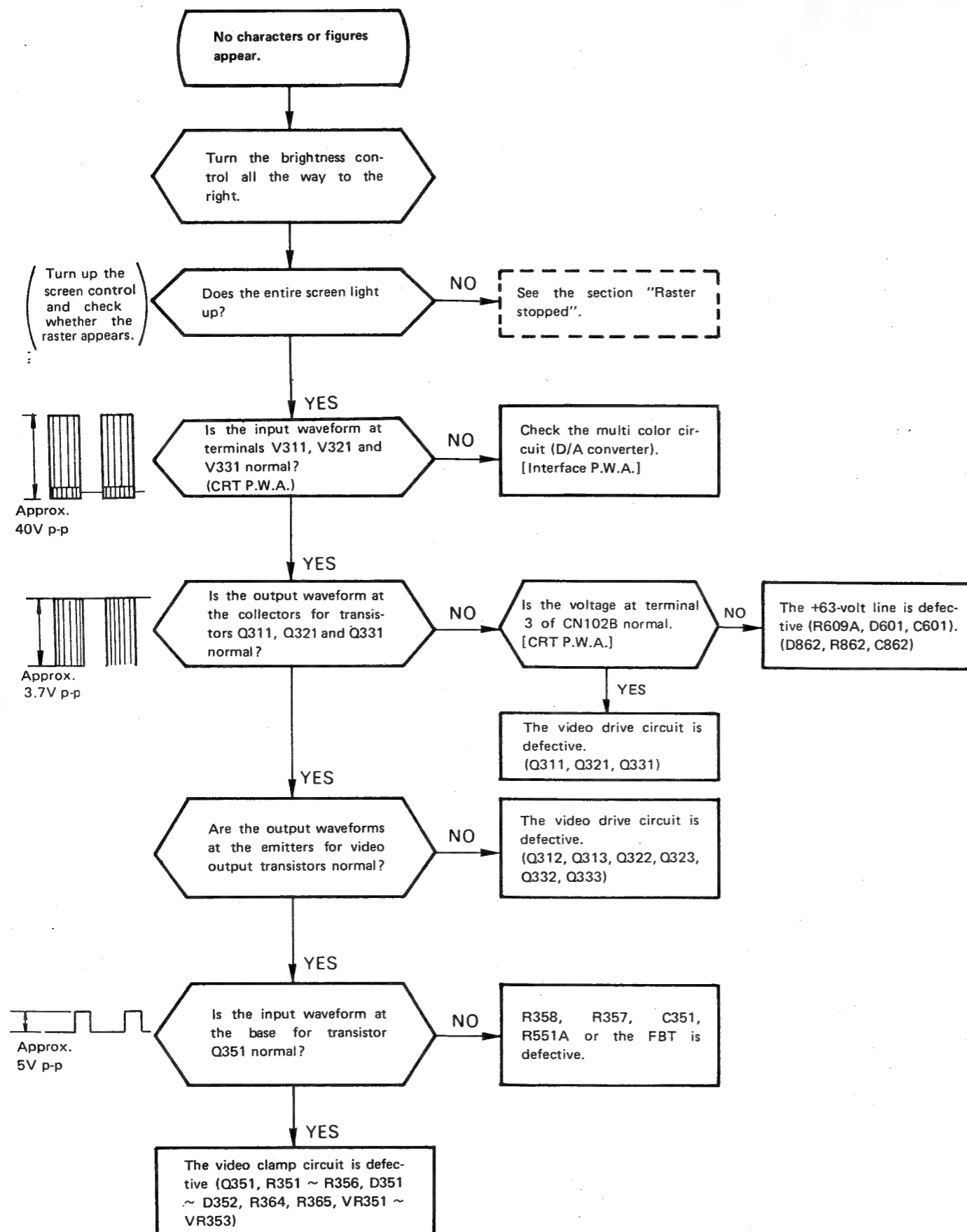
SERVICE NOTE

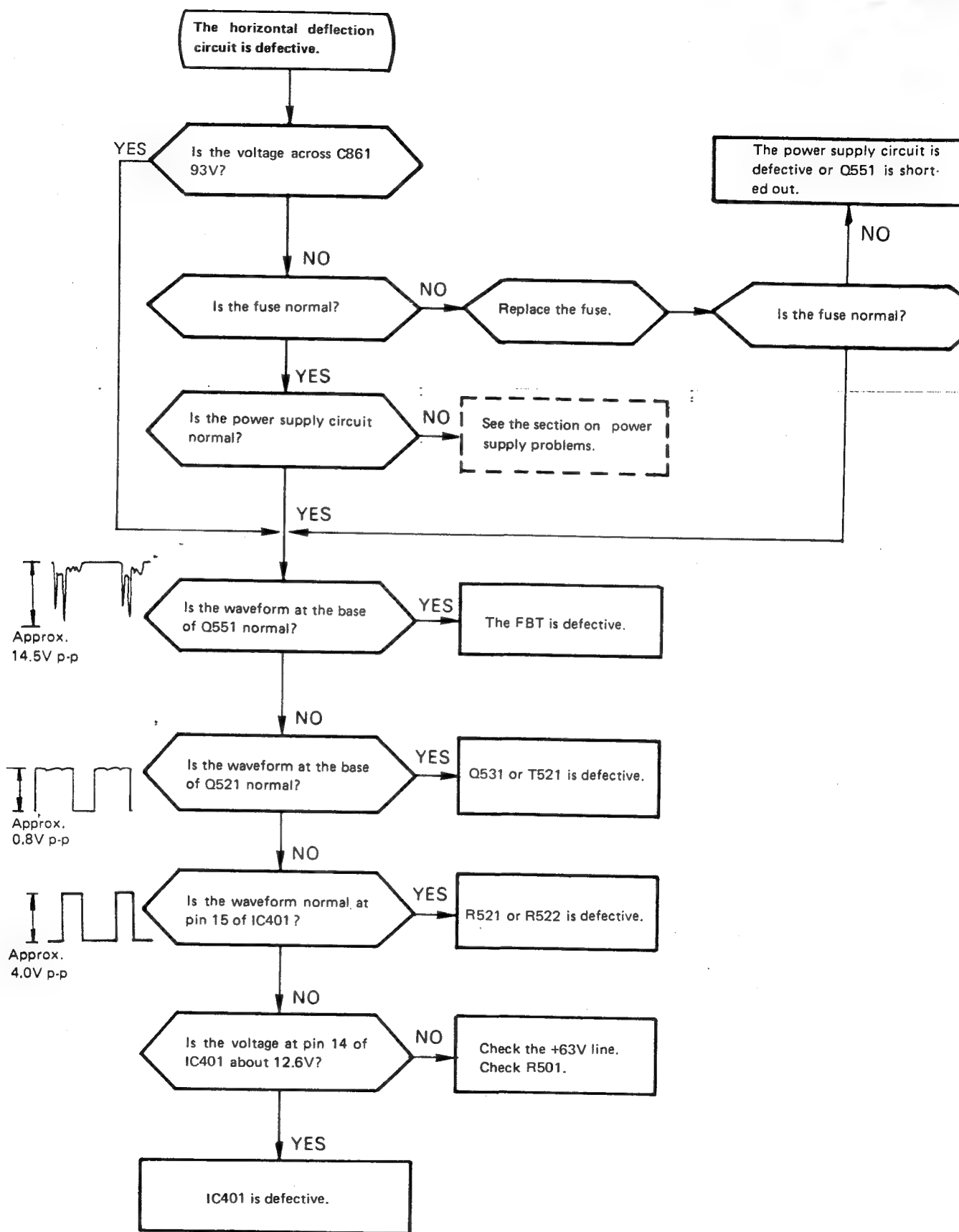
This model has a section that does not share a common ground with the power supply section. The different sections are referred to as the HOT section and the COLD section in the precautions below.

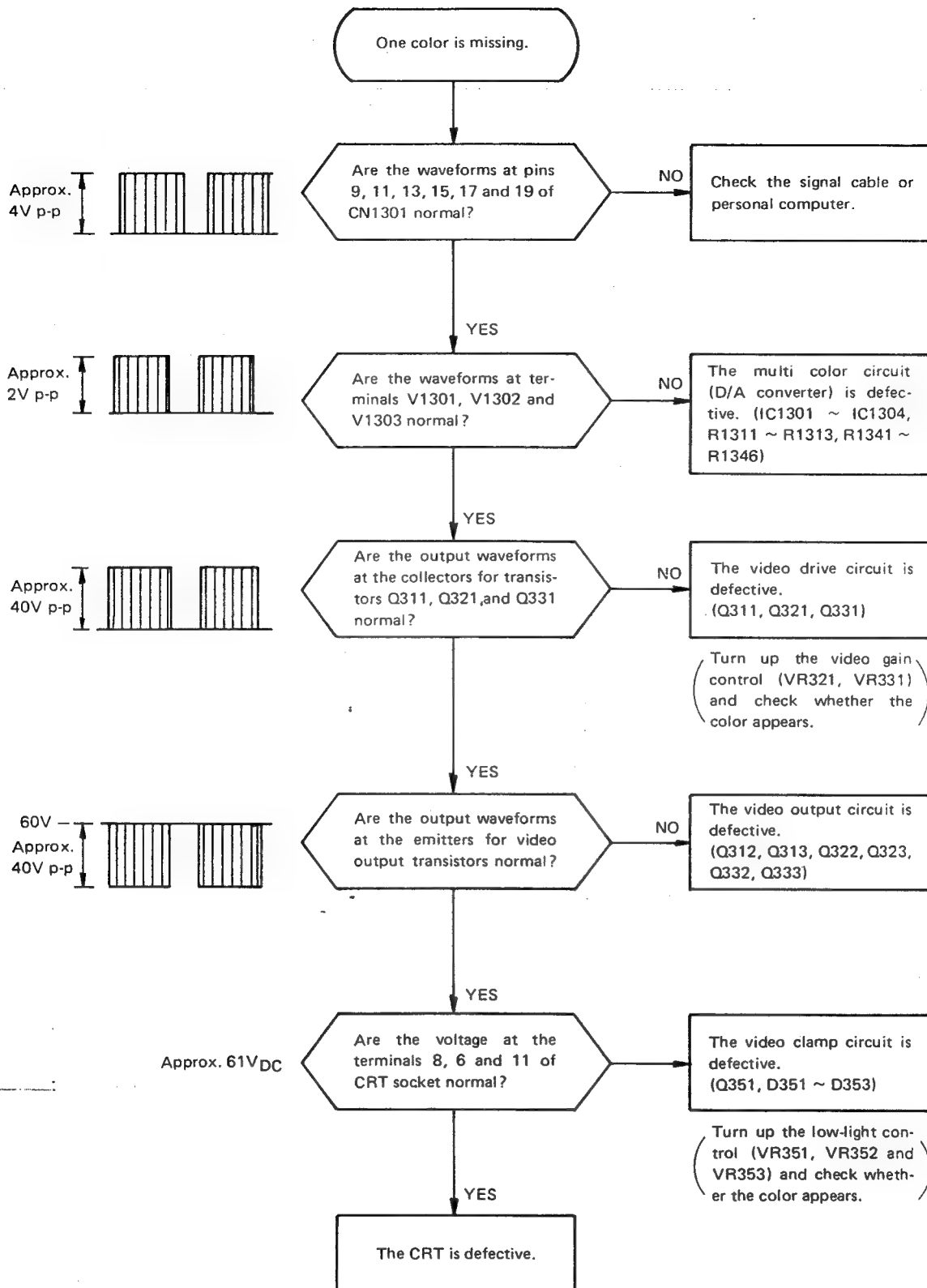
1. Do not touch the HOT section and the COLD section at the same time. You may receive an electric shock.
2. Do not short the HOT section to the COLD section. This could blow the fuse or even damage parts.
3. Never measure the HOT section and the COLD section at the same time when using tools such as oscilloscopes or multimeters.
4. Always unplug the unit before beginning any operation such as removing the chassis.

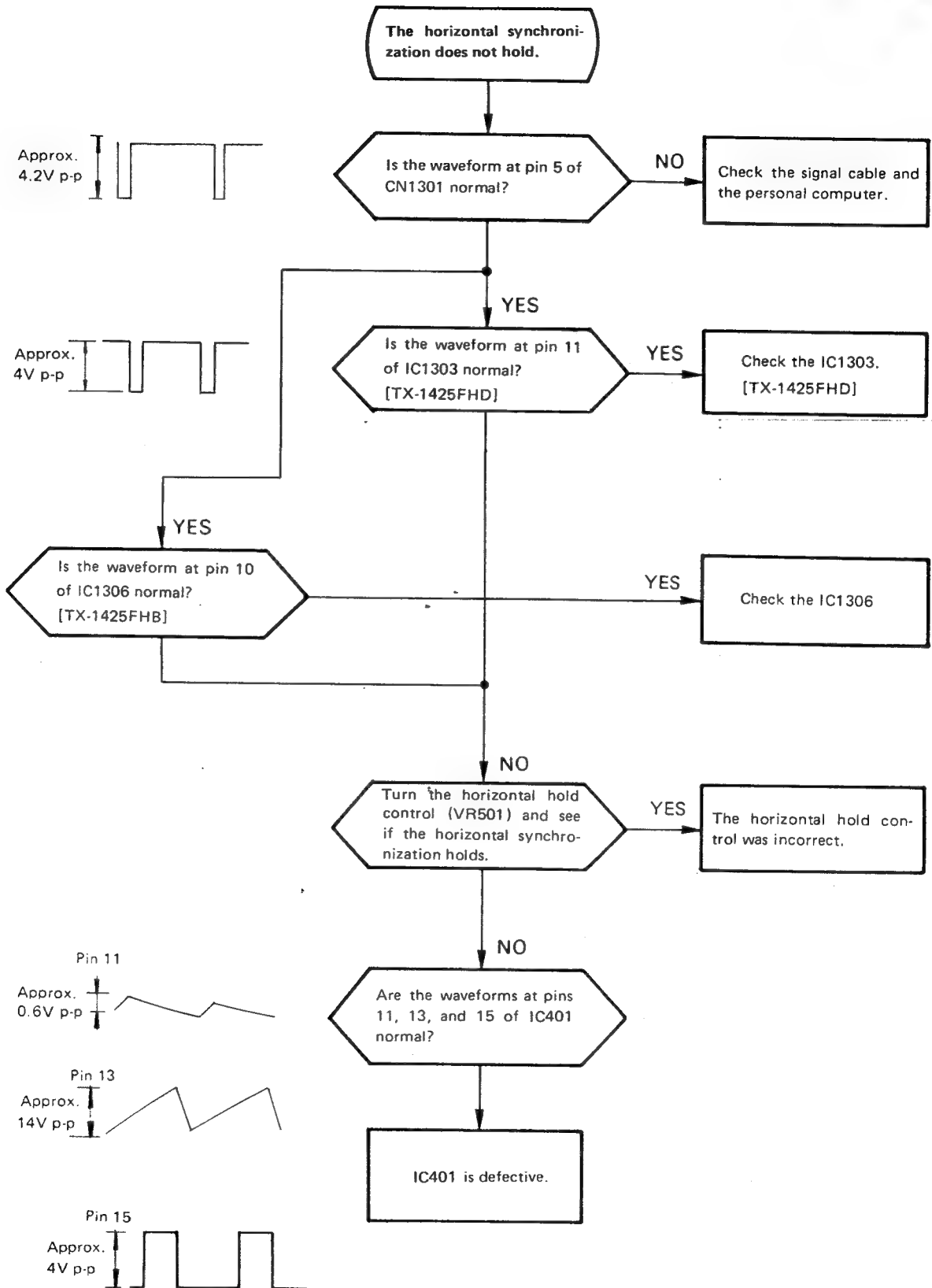


TROUBLESHOOTING HINTS



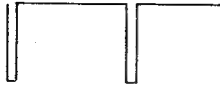






The vertical synchronization does not hold.

Approx.
4.2V p-p



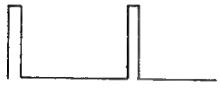
Is the waveform normal at pin 1 of CN1301?

NO

Check the signal cable and the personal computer.

YES

Approx.
3.8V p-p



Is the waveform normal at pin 7 of IC401?

NO

Q1314, R419 or C402A is defective.
[TX-1425FHD]

NO

Q1306, R419 or C402A is defective.
[TX-1425FHB]

YES

Turn the vertical hold control (VR401) and see if the vertical synchronization holds.

YES

The vertical hold control was incorrect.

YES

Are the waveforms normal at pins 6, 2, and 1 of IC401?

NO

IC401 is defective.

Pin 6

Approx.
3.6V p-p



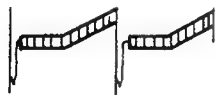
Pin 2

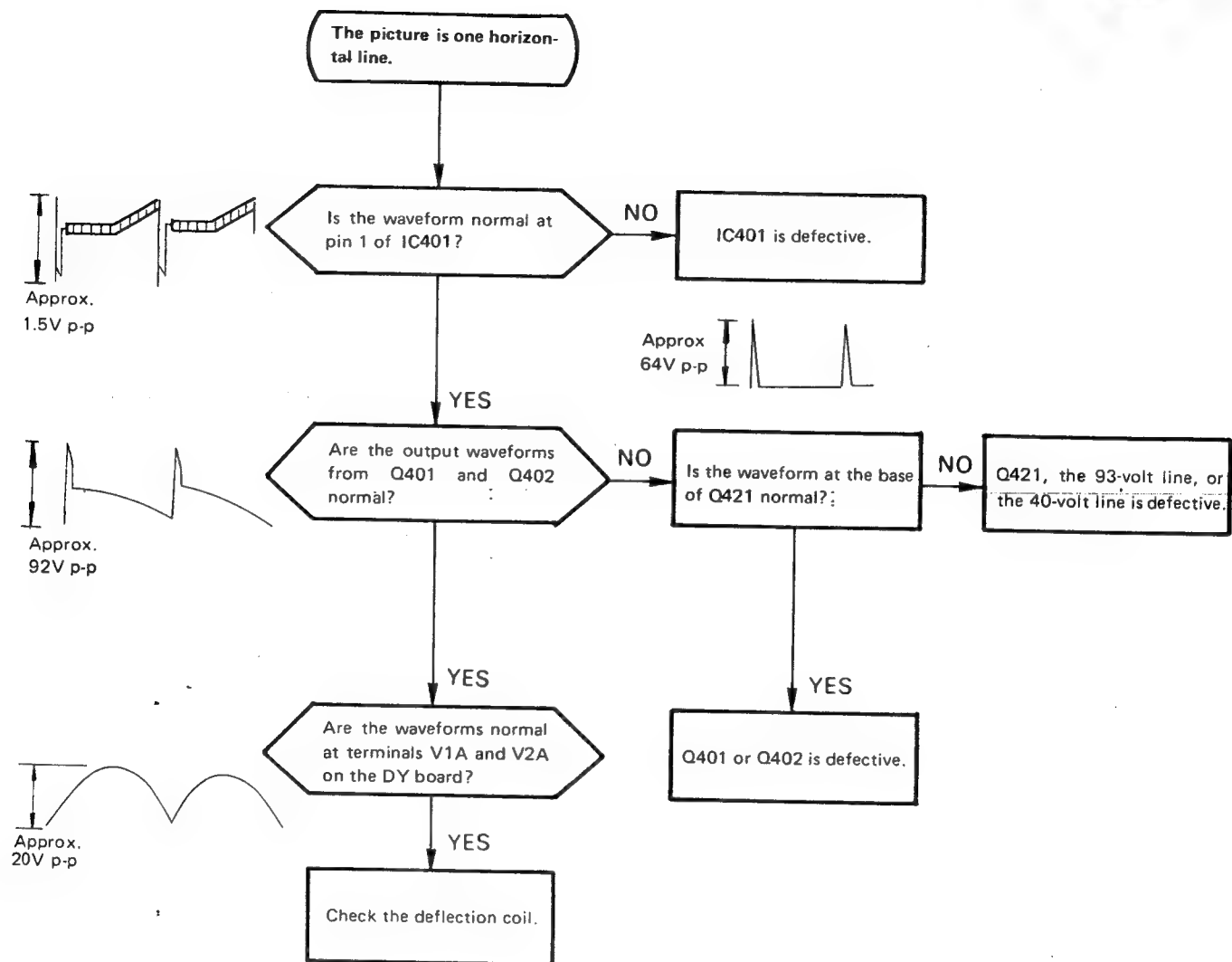
Approx.
2.2V p-p

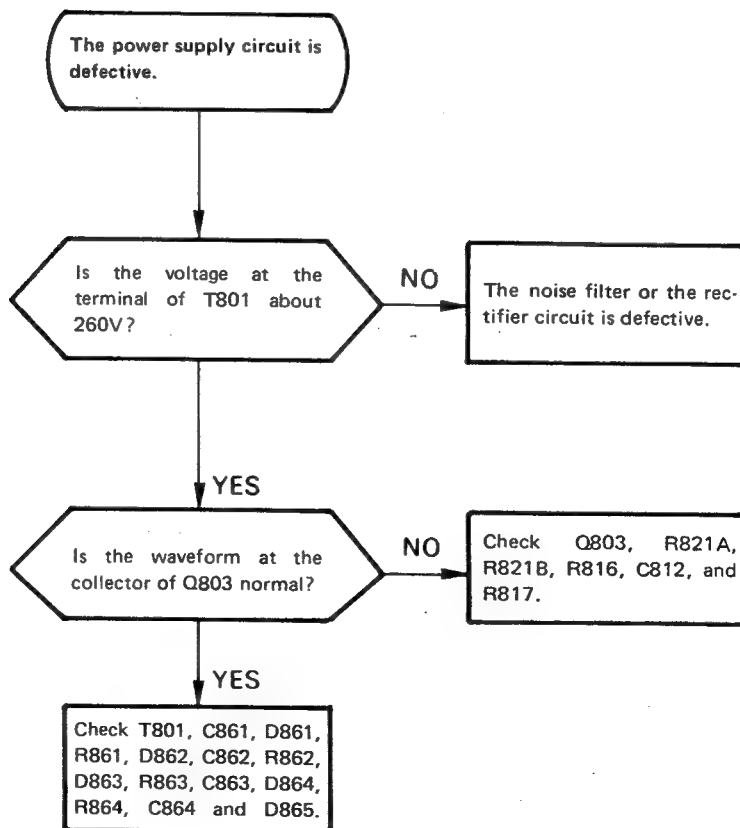
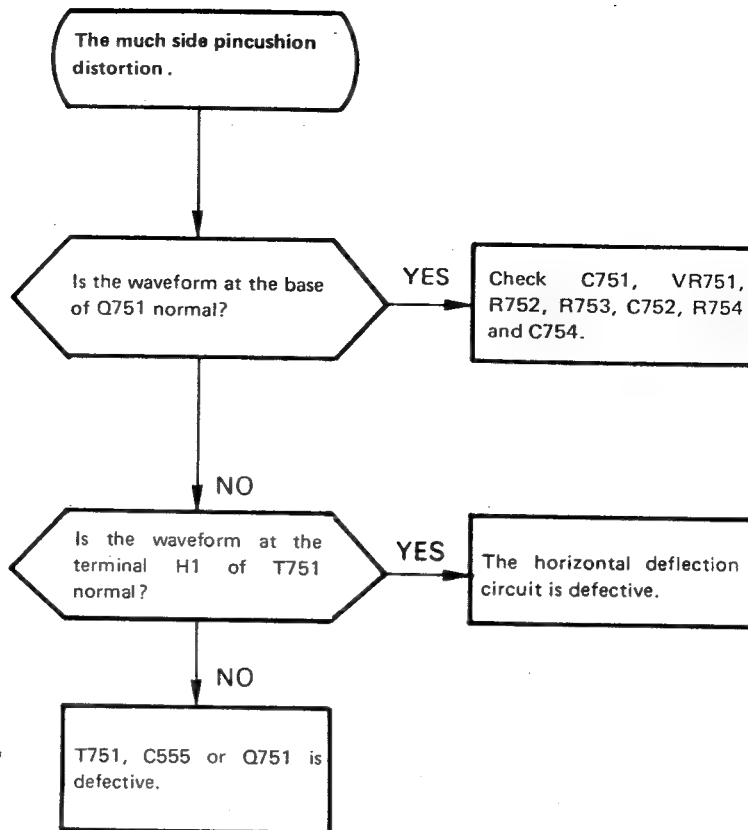
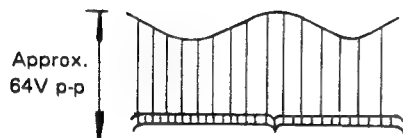


Pin 1

Approx.
1.5V p-p







ABBREVIATION OF DESCRIPTION

RESISTOR

DESCRIPTION

ALLOWANCE	
F	± 1%
J	± 5%
K	±10%
M	±20%
G	± 2%

Example:

REF. NO.	Panasonic Part No.	Description
RESISTORS		
R400	ERDS1FJ151	Carbon 150 Ω J ½W

CAPACITOR

DESCRIPTION

ALLOWANCE	
C	±0.25pF
D	±0.5pF
F	±1pF
J	± 5%
K	±10%
L	±15%
M	±20%
P	±100%–0%
Z	±80%–20%

Example:

REF. NO.	Panasonic Part No.	Description
CAPACITORS		
C1006	ECCD1H050CC	Ceramic 5pF C 50V

NOTE:

In the parts list, parts which have model name indicated in their ().

Parts which do not have model name inserted in () are common to Model TX-1425FHB and Model TX-1425FHD.

REPLACEMENT PARTS LIST

Important Safety Notice

Components identified by the International symbol Δ have special characteristics important for safety.
When replacing any of these components use only manufacture's specified parts.

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
CABINET AND MAIN CHASSIS PARTS					
	TUW85903	Side Plate (R)		TQF83825	Serial No. Label
	TUW85904	Side Plate (L)		TQF14875	Label
	TUX85881-1	Bottom Plate		XTB4+16F	Screw (CRT)
	TUX85106	Upper Plate		XTB4+8F	Screw (I/F)
	TUX85113	CRT Bracket		XTB4+35BFN	Screw
	TUX85819-3	Side Bracket (R)		XTV3+8F	Screw (1P Terminal)
	TUX85820-3	Side Bracket (L)		XTV3+16F	Screw (PCB Holder)
	TUX90019	I/F Bracket		XTW3+8L	Screw (PCB)
	TUX90020	Filter Bracket		XYA4+EF8	Screw (Bracket)
	TUX85121	CRT Bracket		XYE3+EF8	Screw
	TUX80701-2	Cord Bracket		XWC3BFN	Washer (1P Terminal)
	TUC85218	CRT Shield Case		XWG5H17	Washer (CRT)
	TKX822001	PC. Board Holder (Big)		XWA5B	Washer (CRT)
	TES201	Spring		XWS8A	Washer
	TBM90057	Model Plate (TX-1425FHB)		XWA4B	Washer
Δ	TBM90033	Model Plate (TX-1425FHD)		XNS8	Nut
	TMM1459	Clip	TNP89503-22		
	TMM81416	Cord Band	L852	Δ TLP85630	Trans.
	TMM81417	Cord Band (Long)	Δ	TXAJTA3P864	3P Connector Ass'y
	TMM85423	Clamper			
Δ	TMM85511	Rubber (ITC)	TNP85804-32/33		
	TMM81460	Rubber	INTEGRATED CIRCUITS		
	TMM1455	Beads Band	IC401	Δ TVSHA11423	Integrated Circuit
	TMM85411	Edge Barrier	IC581	Δ TVSM5223P	Integrated Circuit
	TMK84549	Parmalloy (Big)	TRANSISTORS		
	TMK84554	Barrier (DY. PC. Board)	Q311	2SC3611	Transistor
Δ	370MYB22N	Picture Tube	Q312	2SC3526H	Transistor
Δ	TLY85321D	Deflection Yoke	Q313	2SA11450Y	Transistor
	TLC2061	Convergence Coil	Q321	2SC3611	Transistor
Δ	TLK859023A	Degauss Coil	Q322	2SC3526H	Transistor
Δ	TNP85804-33	Main PC Board Ass'y (TX-1425FHB)	Q323	2SA11450Y	Transistor
Δ	TNP85804-32	Main PC Board Ass'y (TX-1425FHD)	Q331	2SC3611	Transistor
Δ	TNP81159-31	Interface PC Board Ass'y (TX-1425FHB)	Q332	2SC3526H	Transistor
Δ	TNP81145-31	Interface PC Board Ass'y (TX-1425FHD)	Q333	2SA11450Y	Transistor
Δ	TNP89503-32	Filter PC Board Ass'y	Q351	2SC1573QNC	Transistor
	TSN85511	Magnet	Q421	2SD1264PLB	Transistor
	TXAJTE2P109	2P Connector Ass'y (F12)	Q521	2SC2653HLB	Transistor
VR305	EVH5WAF25B23	Variable Resistor (Bright)	Q751	2DS1266R	Transistor
	TPC900391	Outer Carton (TX-1425FHB)	Q801	2SD639	Transistor
	TPC900171	Outer Carton (TX-1425FHD)	Q802	2SA900R	Transistor
	TXAPD21404ZE	Filler	Q804	2SC1383QNC	Transistor
	TPE814055	Set Cover			
	TPD359036	Filler (Pad)			
Δ	TQF83647	Fuse Label			
Δ	TQF81735	GND Mark Label			
Δ	TQF80759	Warning Label			

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
DIODES			T551	TLF84645D	Flyback Trans.
D311	MA165	Diode	T751	TLH85715	Coil
D312	TVSES1F	Diode	T801	TLP85928D	Trans.
D321	MA165	Diode	CAPACITORS		
D322	TVSES1F	Diode	C311	ECCF1H221J	Ceramic 220pF J 50V
D332	TVSES1F	Diode	C312	ECQE1105KZ	Polyester 1μF K 100V
D351	TVSMC931	Diode	C321	ECCF1H221J	Ceramic 220pF J 50V
D352	TVSMC931	Diode	C322	ECQE1105KZ	Polyester 1μF K 100V
D353	TVSMC931	Diode	C331	ECCF1H221J	Ceramic 220pF J 50V
D361	TVS10E2	Diode	C332	ECQE1105KZ	Polyester 1μF K 100V
D362	TVS10E2	Diode	C341	ECEA2AU101	Electrolytic 100μF — 100V
D401A	MA1051M	Diode	C351	ECEA2AU010	Electrolytic 1μF — 100V
D401B	MA1068M	Diode	C362	ECKD3D122K8N	Ceramic 1200pF K 2kV
D402	MA165	Diode	C363	ECEA2CS010	Electrolytic 1μF — 160V
D403	MA165	Diode	C364	ECEA2CS100	Electrolytic 10μF — 160V
D404	MA165	Diode	C401	ECEA1CU331	Electrolytic 330μF — 16V
D421	TVS10E2	Diode	C402A	ECEA1HN010S	Electrolytic 1μF — 50V
D422	TVS10E2	Diode	C403	ECQB1H682JZ	Polyester 6800pF J 50V
D451	TVS11DQ03C	Diode	C404	ECSF1HE105	Tantalum 1μF — 50V
D452	TVS11DQ03C	Diode	C405	ECKD1H152KB2	Ceramic 1500pF K 50V
D453	TVS11DQ03C	Diode	C406	ECEA2AU100	Electrolytic 10μF — 100V
D454	TVS11DQ03C	Diode	C407	ECEA1EU100	Electrolytic 10μF — 25V
D532	MA1200M	Diode	C408	ECKD1H562KB2	Ceramic 5600pF K 50V
D552N	TVS15DF4	Diode	C409	ECKD2H472KB2	Ceramic 4700pF K 500V
D571	TVS10E2	Diode	C410	ECEA1HU331	Electrolytic 330μF — 50V
D572	MA1051M	Diode	C411	ECKD2H102KB2	Ceramic 1000pF K 500V
D591	MA162	Diode	C421	ECEA2AU3R3	Electrolytic 3.3μF — 100V
D801	TVS20E10	Diode	C501	ECEA25Z3R3	Electrolytic 3.3μF — 25V
D802	TVS20E10	Diode	C502	ECQK1682JZ	Polyester 6800pF J 100V
D803	TVS20E10	Diode	C503	ECEA1HU010	Electrolytic 1μF — 50V
D804	TVS20E10	Diode	C504	ECQP1682JZ	Polypropylene 6800pF J 100V
D805	ERPF5B0M120G	Thermistor	C505	ECQB1H123JZ	Polyester 0.012μF J 50V
D806	ERTD6FFK160M	Thermistor	C506	ECQB1H822JZ	Polyester 8200pF J 50V
D811	MA165	Diode	C507	ECEA1CU100	Electrolytic 10μF — 16V
D812	TVS15DF8	Diode	C509	ECEA1HU010	Electrolytic 1μF — 50V
D813	TVS15DF4	Diode	C521	ECKD2H122KB2	Ceramic 1200pF K 500V
D814	MA1068H	Diode	C522	ECKD2H681KB2	Ceramic 680pF K 500V
D816	TVS15DF4	Diode	C532	ECQM1H104JZ	Polyester 0.1μF J 50V
D851	TVS10E2	Diode	C533	ECKD1H821KB2	Ceramic 820pF K 50V
D861	TVSRG2ALFB1	Diode	C551	ECWH12H392JS	Polypropylene 3900pF J 1.2kV
D862	TVS15DF6	Diode	C552A	ECKC3D271JBN	Ceramic 270pF J 2kV
D863	TVS15DF4	Diode	C553	ECCD2H-221J	Ceramic 220pF J 500V
D864	TVS15DF4	Diode	C555	ECWF2H105JZ	Polypropylene 1μF 500V
D865	TVSR2MV1	Diode	C571	ECEA1EU221	Electrolytic 220μF — 25V
COIL & TRANSFORMERS			C573	ECEA0JU221	Electrolytic 220μF — 6.3V
L311	TLU4R7K186	Peaking Coil	C591	ECEA2ES010	Electrolytic 1μF — 250V
L321	TLU6R8K186	Peaking Coil	C751	ECEA1EU470	Electrolytic 47μF — 25V
L331	TLU4R7K186	Peaking Coil	C752	ECEA1HN2R2S	Electrolytic 2.2μF — 50V
L341	TLU180J186	Peaking Coil	C754	ECEA1HU2R2	Electrolytic 2.2μF — 50V
L551	TLH85720	Coil (Width)	C760	ECEA2CS101	Electrolytic 100μF — 160V
L552	TLH85603	Coil (Lin)	C801	ECQU2A473MN	Polypropylene 0.047μF M 100V
L553	TLT222K266E	Peaking Coil	C802	ECQU2A473MN	Polypropylene 0.047μF M 100V
L801	TLP85624	Trans.	C803	ECKCNS332MFJ	Ceramic 3300pF M
T521	TLH15405	Coil	C804	ECKCNS332MFJ	Ceramic 3300pF M
			C805	ECKCNS472MFJ	Ceramic 4700pF M

EF. NO.	PART NO.	DESCRIPTION			REF. NO.	PART NO.	DESCRIPTION		
806	Δ ECKCNS472MFJ	Ceramic	4700pF	M	R402	ERD25FJ332K	Carbon	3.3kΩ	J 1/4W
807	Δ ECKCNS472MFJ	Ceramic	4700pF	M	R403	ERDS2TJ822	Carbon	8.2kΩ	J 1/4W
808	ECES2DU331	Electrolytic	330μF	— 200V	R404	ERDS2TJ273	Carbon	27kΩ	J 1/4W
809	ECES2DU331	Electrolytic	330μF	— 200V	R405	ERDS2TJ562	Carbon	5.6kΩ	J 1/4W
811	ECEA16Z47	Electrolytic	47μF	— 16V	R406	ERDS2TJ101	Carbon	100Ω	J 1/4W
812	ECQV1H564JZ	TF Capacitor	0.56μF	J 50V	R407	ERD25FJ102K	Carbon	1kΩ	J 1/4W
813	ECQM4103KZ	Polyester	0.01μF	K 400V	R408	ERD25FJ102K	Carbon	1kΩ	J 1/4W
814	ECQB1H223JZ	Polyester	0.022μF	J 50V	R409	ERD25FJ100K	Carbon	10Ω	J 1/4W
815	ECQB1H153JZ	Polyester	0.015μF	J 50V	R410	ERDS2TJ560	Carbon	56Ω	J 1/4W
816	ECQM1H104JZ	Polyester	0.1μF	J 50V	R411	ERDS2TJ822	Carbon	8.2kΩ	J 1/4W
817	ECQM1H223JZ	Polyester	0.022μF	J 50V	R412	ERDS2TJ153	Carbon	15kΩ	J 1/4W
831	Δ ECKCNS472MFJ	Ceramic	4700pF	M	R413	ERDS1FJ102	Carbon	1kΩ	J 1/2W
832	Δ ECKCNS472MFJ	Ceramic	4700pF	M	R414	ERDS2TJ153	Carbon	15kΩ	J 1/4W
861	ECES2CU471	Electrolytic	470μF	— 160V	R415	ERDS1FJ6R8	Carbon	6.8Ω	J 1/2W
862	ECEA2AU100	Electrolytic	10μF	— 100V	R416	ERDS2TJ271	Carbon	270Ω	J 1/4W
863	ECEA1HU471	Electrolytic	470μF	— 50V	R417	ERDS2TJ271	Carbon	270Ω	J 1/4W
864	ECEA1AU331	Electrolytic	330μF	— 10V	R418	ERDS2TJ561	Carbon	560Ω	J 1/4W
					R419	ERDS2TJ562	Carbon	5.6kΩ	J 1/4W
					R421	ERDS1FJ153	Carbon	15kΩ	J 1/2W
					R422	ERDS2TJ102	Carbon	1kΩ	J 1/4W
RESISTORS									
1312	ERDS2TJ330	Carbon	33Ω	J 1/4W	R431	ERDS2TJ152	Carbon	1.5kΩ	J 1/4W
1313	ERDS2TJ100	Carbon	10Ω	J 1/4W	R432	ERG2ANJ561	Metal Oxide	560Ω	J 2W
1314	ERG2ANJ561	Metal Oxide	560Ω	J 2W	R451	ERDS1FJ2R7	Carbon	2.7Ω	J 1/2W
1315	ERG2ANJ561	Metal Oxide	560Ω	J 2W	R501	ERG2SJ332	Metal Oxide	3.3kΩ	J 2W
1316	ERD25FJ101K	Carbon	100Ω	J 1/4W	R502	ERDS2TJ102	Carbon	1kΩ	J 1/4W
1317	ERG1ANJ103	Metal Oxide	10kΩ	J 1W	R503	ERDS2TJ101	Carbon	100Ω	J 1/4W
1318	ERD25FJ101K	Carbon	100Ω	J 1/4W	R504	ERDS2TJ333	Carbon	33kΩ	J 1/4W
1319	ERDS2TJ122	Carbon	1.2kΩ	J 1/4W	R505	ERDS2TJ682	Carbon	6.8kΩ	J 1/4W
1322	ERDS2TJ330	Carbon	33Ω	J 1/4W	R506	ERDS2TJ273	Carbon	27kΩ	J 1/4W
1323	ERDS2TJ100	Carbon	10Ω	J 1/4W	R507	ERDS2TJ682	Carbon	6.8kΩ	J 1/4W
1324	ERG2ANJ561	Metal Oxide	560Ω	J 2W	R508	ERDS2TJ273	Carbon	27kΩ	J 1/4W
1325	ERG2ANJ561	Metal Oxide	560Ω	J 2W	R509	ERDS2TJ222	Carbon	2.2kΩ	J 1/4W
1326	ERD25FJ101K	Carbon	100Ω	J 1/4W	R521	ERDS2TJ471	Carbon	470Ω	J 1/4W
1327	ERG1ANJ103	Metal Oxide	10kΩ	J 1W	R522	ERDS2TJ681	Carbon	680Ω	J 1/4W
1328	ERD25FJ101K	Carbon	100Ω	J 1/4W	R524	ERDS2TJ472	Carbon	4.7kΩ	J 1/4W
1329	ERDS2TJ122	Carbon	1.2kΩ	J 1/4W	R532	ERD25FJ681K	Carbon	680Ω	J 1/4W
1332	ERDS2TJ330	Carbon	33Ω	J 1/4W	R533	ERDS2TJ222	Carbon	2.2kΩ	J 1/4W
1333	ERDS2TJ100	Carbon	10Ω	J 1/4W	R551A	ERQ1CKP1R0	Fuse Resistor	1Ω	K 1W
1334	ERG2ANJ561	Metal Oxide	560Ω	J 2W	R553	ERDS2TJ151	Carbon	150Ω	J 1/4W
1335	ERG2ANJ561	Metal Oxide	560Ω	J 2W	R571B Δ	ER0S2CKF3832	Metal Oxide	38.3kΩ	F 1/4W
1336	ERD25FJ101K	Carbon	100Ω	J 1/4W	R572 Δ	ER0S2CKF1002	Metal Oxide	10kΩ	F 1/4W
1337	ERG1ANJ103	Metal Oxide	10kΩ	J 1W	R573	ERDS2TJ103	Carbon	10kΩ	J 1/4W
1338	ERD25FJ101K	Carbon	100Ω	J 1/4W	R574	ERDS2TJ104	Carbon	100kΩ	J 1/4W
1339	ERDS2TJ122	Carbon	1.2kΩ	J 1/4W	R575	ERDS2TJ473	Carbon	47kΩ	J 1/4W
1351	ERDS2TJ102	Carbon	1kΩ	J 1/4W	R576	ERDS2TJ153	Carbon	15kΩ	J 1/4W
352	ERDS2TJ102	Carbon	1kΩ	J 1/4W	R577	ERDS2TJ123	Carbon	12kΩ	J 1/4W
353	ERDS2TJ102	Carbon	1kΩ	J 1/4W	R578	ERD25FJ100K	Carbon	10Ω	J 1/4W
354	ERDS2TJ224	Carbon	220kΩ	J 1/4W	R591	ERDS2TJ823	Carbon	82kΩ	J 1/4W
355	ERDS2TJ224	Carbon	220kΩ	J 1/4W	R592	ERDS2TJ274	Carbon	270kΩ	J 1/4W
356	ERDS2TJ224	Carbon	220kΩ	J 1/4W	R752	ERDS2TJ102	Carbon	1kΩ	J 1/4W
357	ERDS2TJ471	Carbon	470Ω	J 1/4W	R753	ERDS2TJ222	Carbon	2.2kΩ	J 1/4W
358	ERDS2TJ102	Carbon	1kΩ	J 1/4W	R754	ERDS2TJ560	Carbon	56Ω	J 1/4W
361	ERD25FJ101K	Carbon	100Ω	J 1/4W	R755	ERDS2TJ472	Carbon	4.7kΩ	J 1/4W
362	ERD25FJ183K	Carbon	18kΩ	J 1/4W	R756	ERDS2TJ222	Carbon	2.2kΩ	J 1/4W
363	ERDS2TJ822	Carbon	8.2kΩ	J 1/4W	R801A	ERF5ZYK3R3	Non Flame	3.3Ω	K 5W
368	ERDS2TJ121	Carbon	120Ω	J 1/4W	R808	ERD25FJ564K	Carbon	560kΩ	J 1/4W
401	ERG1ANJ152	Metal Oxide	1.5kΩ	J 1W	R809	ERD25FJ564K	Carbon	560kΩ	J 1/4W

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
R811	ERQ14AJ1R0	Fuse Resistor 1Ω J 1/4W		TMM85210	CRT Socket Cover
R812	ER0S2CKG2051	Metal Oxide 2.05kΩ G 1/4W		TUW85304	Switch Bracket
R813	ER0S2CKG8250	Metal Oxide 825Ω G 1/4W		TUX90039	Switch Bracket
R814	ERDS2TJ471	Carbon 470Ω J 1/4W		TXAJTE2P143	2P Connector Ass'y (TX-1425FHB)
R815	ERDS2TJ101	Carbon 100Ω J 1/4W		TXAJTE3P882	3P Connector Ass'y (TX-1425FHB)
R816	ERG2ANJ101	Metal Oxide 100Ω J 2W		TXAJTE8P008	8P Connector Ass'y (TX-1425FHD)
R817	ERDS2TJ122	Carbon 1.2kΩ J 1/4W		XBA2C31TR0A	Fuse (AC)
R818A	ERDS1FJ124	Carbon 120kΩ J 1/2W		TXAJTA4P394A	4P Connector Ass'y
R818B	ERDS1FJ124	Carbon 120kΩ J 1/2W			
R819	ERDS1FJ471	Carbon 470Ω J 1/2W			
R820	ERW12PKR47	Wire Wound 0.47Ω K 1/2W			
R821A	ERDS1FJ274	Carbon 270kΩ J 1/2W			
R821B	ERDS1FJ274	Carbon 270kΩ J 1/2W			
R822	ERDS2TJ821	Carbon 820Ω J 1/4W			
R856	ERDS1FJ330	Carbon 33Ω J 1/2W			
R861	ERDS1FJ1R0	Carbon 1Ω J 1/2W			
R862	ERD25FJ1R0K	Carbon 1Ω J 1/4W			
R863	ERD25FJ1R0K	Carbon 1Ω J 1/4W			
R864	ERQ14AJ1R0	Fuse Resistor 1Ω J 1/4W			
CONTROLS			TNP81159-31 (TX-1425FHB)		
VR321	EVN4HCA00B32	Variable Resistor (G. Gain)	INTEGRATED CIRCUITS		
VR331	EVN4HCA00B32	Variable Resistor (B. Gain)	IC851	M74LS123P	Integrated Circuit
VR352	EVN4HCA00B13	Variable Resistor (G. Low light)	IC1301	MB74S00	Integrated Circuit
VR353	EVN4HCA00B13	Variable Resistor (B. Low light)	IC1302	MB74S20	Integrated Circuit
VR401	EVNK4BA00B53	Variable Resistor (V. Hold)	IC1303	MB74S38	Integrated Circuit
VR351	EVN4HCA00B13	Variable Resistor (R. Low light)	IC1304	MB74S38	Integrated Circuit
VR402	EVM4HGA00B52	Variable Resistor (Height)			
VR431	EVMK4GA00B14	Variable Resistor (V. Center)	IC1305	MB74S38	Integrated Circuit
VR451	EVNK4BA00B32	Variable Resistor (AMP)	IC1306	DN74LS04	Integrated Circuit
VR452	EVNK4BA00B32	Variable Resistor (TILT)			
VR501	EVN4HCA00B33	Variable Resistor (H. Hold)			
VR751	EVN4HCA00B53	Variable Resistor (V. PCC)	TRANSISTORS		
VR811	EVN4HCA00B13	Variable Resistor (AVR)	Q851	2SC828AR	Transistor
			Q1301	2SC1383QNC	Transistor
			Q1302	2SC1846R	Transistor (Q.R)
			Q1306	2SC828AR	Transistor
OTHER PARTS			DIODES		
S311	TGPS152GL	Spark Gap	D852	MA1051M	Diode
S321	TGPS152GL	Spark Gap	D853	MA150	Diode
S331	TGPS152GL	Spark Gap	D1301	MA1051M	Diode
	ESD393T	Switch (AC)	D1302	MA1051M	Diode
V311	TJS848100	Socket	D1303	MA1051M	Diode
V321	TJS848100	Socket	D1304	MA1051M	Diode
V331	TJS848100	Socket	D1307	MA150	Diode
CL861	TJE81101	Terminal	D1308	MA1056M	Diode
CL862	TJE81110	Terminal	D1309	MA150	Diode
FS801	TJC3316	Fuse Holder	D1361	MA1051M	Diode
FS802	TJC3316	Fuse Holder	D1371	MA1051M	Diode
RL851	TSE80830	Switch			
TS361	TJS828620	CRT Socket			
AC1	TJE80301	Terminal			
AC2	TJE80301	Terminal			
	2SD1264ALB	Transistor (V-out)	CAPACITORS		
	2SC3212A	Transistor (Power)	C851	ECQB1H103JZ	Polyester 0.01μF J 50V
	2SD1632RL	Transistor (H-out)	C852	ECEA0JU331	Electrolytic 330μF — 6.3V
	TQF87212-1	Fuse Label	C853	ECEA0JU331	Electrolytic 330μF — 6.3V
	TMM81416	Cord Band	C854	ECEA0JU331	Electrolytic 330μF — 6.3V
			C855	ECEA1AU331	Electrolytic 330μF — 10V
			C1301	ECEA1CU331	Electrolytic 330μF — 16V
			C1302	ECEA1AU101	Electrolytic 100μF — 10V
			C1303	ECEA1CU100	Electrolytic 10μF — 16V
			C1304	ECEA1AU101	Electrolytic 100μF — 10V
			C1305	ECKF1H103ZF	Ceramic 0.01μF Z 50V
			C1306	ECKF1H103ZF	Ceramic 0.01μF Z 50V
			C1307	ECKF1H103ZF	Cer

REF. NO.		PART NO.		DESCRIPTION				REF. NO.		PART NO.		DESCRIPTION			
RESISTORS								TNP81145-31 (TX-1425FHD)							
								INTEGRATED CIRCUITS							
R851	ERD25FJ332K	Carbon	3.3kΩ	J	1/4W			IC851	M74LS123P	Integrated Circuit					
R852	ERD25FJ562K	Carbon	5.6kΩ	J	1/4W			IC1301	MB74S00	Integrated Circuit					
R854	ERD25FJ273K	Carbon	27kΩ	J	1/4W			IC1302	MB74S38	Integrated Circuit					
R855	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W			IC1303	MB74S00	Integrated Circuit					
R857	ERD25FJ151K	Carbon	150Ω	J	1/4W			IC1304	MB74S38	Integrated Circuit					
R1301	ERD25FJ471K	Carbon	470Ω	J	1/4W			IC1305	MB74S38	Integrated Circuit					
R1302	ERD25FJ471K	Carbon	470Ω	J	1/4W										
R1303	ERD25FJ471K	Carbon	470Ω	J	1/4W										
R1304	ERD25FJ471K	Carbon	470Ω	J	1/4W										
R1307	ERD25FJ331K	Carbon	330Ω	J	1/4W										
								TRANSISTORS							
R1308	ERD25FJ331K	Carbon	330Ω	J	1/4W			Q851	2SD639	Transistor					
R1309	ERD25FJ331K	Carbon	330Ω	J	1/4W			Q1311	2SC1383QNC	Transistor					
R1310	ERD25FJ331K	Carbon	330Ω	J	1/4W			Q1312	2SC1846R	Transistor (Q.R)					
R1313	ERD25FJ101K	Carbon	100Ω	J	1/4W			Q1314	2SD639	Transistor					
R1314	ERD25FJ821K	Carbon	820Ω	J	1/4W										
R1315	ERD25FJ271K	Carbon	270Ω	J	1/4W										
R1316	ERD25FJ221K	Carbon	220Ω	J	1/4W										
R1321	ERD25FJ390K	Carbon	39Ω	J	1/4W										
R1322	ERD25FJ820K	Carbon	82Ω	J	1/4W										
R1323	ERD25FJ221K	Carbon	220Ω	J	1/4W										
R1324	ERD25FJ471K	Carbon	470Ω	J	1/4W										
R1331	ERD25FJ390K	Carbon	39Ω	J	1/4W										
R1332	ERD25FJ820K	Carbon	82Ω	J	1/4W										
R1333	ERD25FJ221K	Carbon	220Ω	J	1/4W										
R1334	ERD25FJ471K	Carbon	470Ω	J	1/4W										
R1335	ERD25FJ151K	Carbon	150Ω	J	1/4W										
R1341	ERD25FJ390K	Carbon	39Ω	J	1/4W										
R1342	ERD25FJ820K	Carbon	82Ω	J	1/4W										
R1343	ERD25FJ221K	Carbon	220Ω	J	1/4W										
R1344	ERD25FJ471K	Carbon	470Ω	J	1/4W										
R1350	ERG1ANJ270	Metal Oxide	27Ω	J	1W										
R1352	ERD25FJ102K	Carbon	1kΩ	J	1/4W										
R1353	ERD25FJ102K	Carbon	1kΩ	J	1/4W										
R1361	ERD25FJ682K	Carbon	6.8kΩ	J	1/4W										
R1362	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W										
R1363	ERD25FJ102K	Carbon	1kΩ	J	1/4W										
R1364	ERD25FJ332K	Carbon	3.3kΩ	J	1/4W										
R1371	ERD25FJ682K	Carbon	6.8kΩ	J	1/4W										
R1372	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W										
R1373	ERD25FJ102K	Carbon	1kΩ	J	1/4W										
CONTROL															
VR1301	EVM4HGA00B13	Variable Resistor (Sub Bright)													
OTHER PARTS															
F1	TJS878202	2P Socket													
F2	TJS878202	2P Socket													
F6	TJS878203	3P Socket													
F7	TJS828370	20P Socket													
G2	TWH892036	Cable (36cm)													
R2	TWH892036	Cable (36cm)													
								RESISTORS							
R851	ERD25FJ332K	Carbon	3.3kΩ	J	1/4W			R851	ERD25FJ332K	Carbon	3.3kΩ	J	1/4W		
R852	ERD25FJ562K	Carbon	5.6kΩ	J	1/4W			R852	ERD25FJ562K	Carbon	5.6kΩ	J	1/4W		
R854	ERD25FJ273K	Carbon	27kΩ	J	1/4W			R854	ERD25FJ273K	Carbon	27kΩ	J	1/4W		
R855	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W			R855	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W		
R857	ERD25FJ151K	Carbon	150Ω	J	1/4W			R857	ERD25FJ151K	Carbon	150Ω	J	1/4W		
R1301	ERD25FJ331K	Carbon	330Ω	J	1/4W			R1301	ERD25FJ331K	Carbon	330Ω	J	1/4W		

REF. NO.	PART NO.	DESCRIPTION					REF. NO.	PART NO.	DESCRIPTION				
R1302	ERD25FJ471K	Carbon	470Ω	J	1/4W	R1345	ERD25FJ151K	Carbon	150Ω	J	1/4W		
R1303	ERD25FJ331K	Carbon	330Ω	J	1/4W	R1346	ERD25FJ151K	Carbon	150Ω	J	1/4W		
R1304	ERD25FJ471K	Carbon	470Ω	J	1/4W	R1351	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W		
R1305	ERD25FJ331K	Carbon	330Ω	J	1/4W	R1352	ERD25FJ682K	Carbon	6.8kΩ	J	1/4W		
R1306	ERD25FJ471K	Carbon	470Ω	J	1/4W	R1353	ERD25FJ472K	Carbon	4.7kΩ	J	1/4W		
R1307	ERD25FJ331K	Carbon	330Ω	J	1/4W	R1354	ERD25FJ682K	Carbon	6.8kΩ	J	1/4W		
R1311	ERDS1FJ121	Carbon	120Ω	J	1/2W	R1356	ERD25FJ102K	Carbon	1kΩ	J	1/4W		
R1312	ERDS1FJ121	Carbon	120Ω	J	1/2W	R1357	ERD25FJ102K	Carbon	1kΩ	J	1/4W		
R1313	ERDS1FJ121	Carbon	120Ω	J	1/2W	CONTROL							
R1314	ERD25FJ221K	Carbon	220Ω	J	1/4W								
R1315	ERD25FJ821K	Carbon	820Ω	J	1/4W	VR1311	EVN4HCA00B13	Variable Resistor (Sub Bright)					
R1316	ERD25FJ271K	Carbon	270Ω	J	1/4W	OTHER PARTS							
R1317A	ERDS1FJ560	Carbon	56Ω	J	1/2W								
R1317B	ERDS1FJ560	Carbon	56Ω	J	1/2W	CN1301	TJS828370	Socket					
R1318	ERD25FJ101K	Carbon	100Ω	J	1/4W	CN1302	TJS878208	8P Socket					
R1321	ERD25FJ331K	Carbon	330Ω	J	1/4W	CN1303	TJS878202	2P Socket					
R1322	ERD25FJ471K	Carbon	470Ω	J	1/4W	V1301	TWH892026	Cable (RF) (26)					
R1323	ERD25FJ331K	Carbon	330Ω	J	1/4W	V1302	TWH892029	Cable (RF) (29)					
R1324	ERD25FJ471K	Carbon	470Ω	J	1/4W	V1303	TWH892037	Cable (RF) (37)					
R1325	ERD25FJ331K	Carbon	330Ω	J	1/4W								
R1326	ERD25FJ471K	Carbon	470Ω	J	1/4W								
R1341	ERD25FJ271K	Carbon	270Ω	J	1/4W								
R1342	ERD25FJ271K	Carbon	270Ω	J	1/4W								
R1343	ERD25FJ271K	Carbon	270Ω	J	1/4W								
R1344	ERD25FJ151K	Carbon	150Ω	J	1/4W								